VOLUME V NUMBER 11

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association

EDITOR

CARL B. DRAKE, M. D., St. Paul

ASSISTANT EDITORS

STANLEY R. MAXEINER, M. D., Minneapolis EVERETT K. GEER, M. D., St. Paul

ASSOCIATE EDITORS

First District
GEO. S. WATTAM, M. D., Warren

Second District
F. H. KNICKERBOCKER, M. D., Staples

Third District
E. L. TUOHY, M. D., Duluth

Fourth District
F. L. ADAIR, M. D., Minneapolis

Fifth District
GEO. B. WEISER, M. D., New Ulm

Sixth District
F. M. MANSON, M. D., Worthington

Seventh District
H. B. AITKENS, M. D., Le Sueur Center

Eighth District
F. P. STRATHERN, M. D., St. Peter

NOVEMBER 1922

CONTENTS

ORIGINAL ARTICLES:

J. FRANK CORBETT, M.D., Minneapolis—Presidential Address—Problems of the Medical Profession, Past and Present 635

JUDSON DALAND, M.D., Philadelphia—The Diagnosis of Focal Infection 640

C. EUGENE RIGGS, M.D., Saint Paul—The Coincidence of Shingles and Chicken-Pox 646

GORDON B. NEW, M.D., and HERMANN E. BOZER, M.D., Rochester—Hyperhidrosis of the Cheek Associated with Injury to the Parotid Region 652

S. A. WEISMAN, M.D., Minneapolis—Bronchiectasis—A Report of Fifty-one Cases 657

MORRIS I. BIERMAN, B.S., M.D., St. Louis, Mo.—Low Virulence in Miliary Tuberculosis 661

PAUL H. KELLY, M.D., Saint Paul—Strangulated Hernia 666

H. S. DIEHL, M.D., M.A., Minneapolis—The Part of the Practicing Physician in Public Health Work 671

(Continued on Advertising Page III)

Owned and Published Monthly by

THE MINNESOTA STATE MEDICAL ASSOCIATION

BUSINESS MANAGER
J. R. BRUCE, 403 Central Bank Bldg., Saint Paul
Telephone: N.W. Cedar 1683
210 Commercial Bldg., Minneapolis
Telephone: Atlantic 2716

Entered at the Post Office in Saint Paul as second class mail matter.
Accepted for mailing at the special rate of postage provided for in section 1103, act of October 3, 1917, authorized July 13, 1918.

Subscription Price { $3.00 yearly, Domestic
$3.50 yearly, Foreign

"To enable, by a simple vaccination, to pick out those who are naturally immune to diphtheria from those who are susceptible, is surely a diagnostic achievement. It is just so much greater because the test is harmless and prevents the unnecessary waste of expensive antitoxin, and it saves large numbers of children the inconvenience and annoyance of the injection itself.

"Far better to vaccinate against a possible infection than take a chance; and, better still, to know with a reasonable degree of assurance that such a vaccination is not necessary. Not to take precautions is to stand on a footing with the anti-vaccinationists."

—Louisiana State Health Board Bulletin.

Eradicate diphtheria by immunization

SCHICK TEST SQUIBB is a reliable diagnostic test for susceptibility to diphtheria. A safe guide in determining the need of Toxin-Antitoxin immunization.

DIPHTHERIA TOXIN-ANTITOXIN MIXTURE SQUIBB establishes an active immunity against diphtheria, lasting three years or longer. As easy to administer as typhoid vaccine.

DIPHTHERIA ANTITOXIN SQUIBB is isotonic with the blood. Small bulk, with a minimum of solids, insures rapid absorption and lessens the dangers of severe anaphylactic reaction.

Complete information on request.

E·R·SQUIBB & SONS, NEW YORK
MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association

VOL. V NOVEMBER 1922 NO. 11

ORIGINAL ARTICLES

PROBLEMS OF THE MEDICAL PROFESSION, PAST AND PRESENT*

J. FRANK CORBETT, M.D.
Minneapolis

In choosing a subject on which to address you, in place of some attempt at a scientific dissertation I have decided to talk to you about the doctor in a very general way. Like all other callings, it is rather common for the medical profession to consider themselves a peculiar people, set aside from the common herd, and possessed of special traditions, qualifications, and privileges. History tells us plainly that the medical profession of the ages has only been a part of the age in which its members lived, and that the standards of our profession have been largely gauged by the general state of learning, or, in some instances, of prejudice, superstition, and madness, common to most people at the particular time we have under consideration.

Chaucer's doctor (1340-1400) was a product of his time, deporting himself as though perfect in the art that no one has ever mastered, believing in the influence of astral bodies, thoroughly versed in Esculapius, and best described in the words of the poet himself:

"Wel knew he the olde Esculapius,
And Deiscorides, and eek Rufus;
Old Ypocras, Haly, and Galien;
Serapion, Razis, and Avicen;
Averrois, Damascien, and Constantyn;
Bernard, and Gatesden, and Gilbertyn.
Of his diete mesurable was he,
For it was of no superfluitee,
But of greet norissing and digestible.
His studie was but litel on the Bible.
In sangwin and in pers he clad was al,
Lyned with taffata and with sendal;
And yet he was but esy of dispence;
He kepte that he wan in pestilence.
For gold in phisik is a cordial,
Therfor he lovede gold in special."

The conceits of this man did not die with him, and even the people of today thoroughly believe the last two lines. The following quotation from Bell's Principles of Surgery, printed in 1801, describes a state of mind of both the medical profession and the world at large during the middle ages.

"In hemorrhagy they tried rather to divert the blood than to stop it directly; they applied cupping glasses near the open vessels; put ligatures around limbs, made strong friction, or opened a vein in some distant part of the body; they operated from right to left, not diagonally but according to direct line of the body. The body of a bleeding chicken was used to control hemorrhage, as the following tale records:

"'The villain was taken and condemned to be divided into quarters for the benefit of the whole city, but before this he underwent the following initiating ceremony. He was carried to the square where he had committed the murder and there the hangman cut off his right hand with an ax; but lest he should die of the hemorrhage the hangman's wife, in whose lap the thief sat during his progress, took a live fowl which she had provided, cut it up with a knife from gut to breast bone, thrust the bleeding stump into it and tied it firm and hooped it on with garters like a boxing-glove. He was dragged on the hurdle for a full hour before he arrived at a spot where he was to finish his career, and to the admiration of Plateus he lost not one drop of blood.'"

"Favorite remedies were iron ore, 'Hematit,' whose very touch suppressed bleeding; live toads tied on a string about the neck behind the ears; or moss from a dead man's skull. Michael Mercatus says the effect of toads is a truth of which any person willing to take the trouble may satisfy himself by a very simple experiment. If you hang a toad around a cock's neck for a day you may then cut off his head and it will not bleed. Wolfius, Senertus, Mercatus, Hoffmann, Moebius do diligently commend the toad. Wolfius believed moss from the skull of a murderer was of most use to physicians."

"It was natural for the Arabians to adopt the farrier's cautery, a device that probably had its inception in some blacksmith shop of the distant past. The heated iron, 'Sceptrum ad restringendum flexum sanguinis,' was the resort in case of extremity. From actual cautery it was natural to proceed to use substances which had a similar

*Presidential Address before the annual meeting of the Minnesota State Medical Association, Minneapolis, October 13, 1922.

operation, caustic and hot oil, so-called potential cauteries. Melted lead, boiling oil of turpentine, blue vitriol in small linen sacks were standard remedies. Of the sudden hemorrhagy which followed these procedures thousands died, while few escaped a dangerous loss of blood and repeated cauterizing for many successive dressings. Sir Kenelm Digby's (1658) sympathetic powder staunched blood as well when applied to weapon as to wound."

In this connection it must be remembered that Celsus had lived and written before this. And the teachings of Celsus, far above the practices of the middle ages, were truly representative of the time in which he lived. Our quotation gives us some idea of the condition of human mind when Ambrose Paré came upon the horizon. Such men as Paré (1510-1590) and Harvey (1578-1657), transcending in clearness of vision, accuracy of observation, and soundness of logic, untrammeled by tradition or prejudice, stand as beacon lights through the ages.

The centuries preceding 1500 had produced but few really illustrious names. The sixteenth century brought Paré and Harvey in medicine, Versalius in Anatomy (De Corporis Humana Fabrica); and in other walks of life gave us such names as John Knox, St. Francis Xavier, John Calvin, "Blessed" Thomas More, Martin Luther, Gerardus Mercator, Sir Francis Drake, Cervantes, Sir Walter Raleigh, Edmund Spenser, Francois Rabelais, Francis Bacon, de Vega, William Shakespeare, Christopher Marlowe, and Ben Jonson. Eustachio Bartolomeo and Fallopio Gabriella must not be forgotten. Michelangelo, Titian, and Raphael were painting immortal pictures. The general awakening of humanity had occurred in other lines of work a little before Harvey and Paré; so, again, these men represented the great general awakening of the times.

Molière (1622) exposed the vices and foibles of his day. And, like even princes and potentates of his day, the doctor is unmercifully grilled. However, when we read Molière let us remember that about this time a monster by the name of Jeffreys, who executed Dr. Bateman for the crime of bathing the wounds of Titus Oates and who strewed England with corpses and covered the land with gibbets erected for the execution of innocent people, was Chief Justice of England. If Molière's criticisms or caricatures were true, then the doctor of his time was the product of his time. Molière's dramas reflect a general state of mind rather than any peculiar trait of the medical profession. Utter credulity combined with such lack of integrity that the patient often deceived his medical adviser, willingness to accept miraculous tales of healing on the part of the public, all left their imprint upon the doctor of this period. Molière's witticisms had their justification in the absurd practice of medical men of that time and their adherence to misconceived principles such as various humors and spirits, generation of heat in the heart, and putrefaction of humors. Chicanery properly belonging to the middle ages is still practised, for the simple reason that it is still demanded and expected. I will quote a few random lines from Molière: "I think I had better stick to physic all my life. I find it is the best of trades, for whether we are right or wrong we are paid equally well. We can spoil a man without paying one farthing for the damage done." Please remember these words were uttered by a conception of Molière's, a quack, who, without any medical training, assumed the rôle of doctor. He was sustained by Lisette, who is made to say, "I know a man who could prove with good reason that we should never say so-and-so died of a fever or pleurisy but of four doctors and two apothecaries."

From the drama, "The Doctor, In Spite of Himself" (Le Medicin Malgre Lui), I will make a brief synopsis. Sganarrelle, a woodchopper, is forced to assume the rôle of a doctor, after a most urgent persuasion with a club. His first patient is a young woman who had become speechless. He is told this. Fearing another beating, he visits her in the robes of a doctor, feels her pulse, diagnoses mutism, of which he had just been told, and mystifies his hearers. Informed by Leandra that the illness is feigned by the girl to avoid a hateful marriage, feeding her bread and wine he cures her miraculously by uniting the desired man to the girl. Sganarrelle again impersonating the doctor, and mistaking the father of the girl to be his patient, gets out of the dilemma with the following words: "It does not matter, the blood of the father and that of the daughter are the same, and by the deterioration of the blood of the father I can know the illness of the daughter." He further says, "I am the greatest, the cleverest, the wisest doctor in the vegetable, animal and mineral faculty."

Following Paré and Harvey there seemed to be a recession in medical science. In 1731 the Academy of Surgery, under Jean Louis Petit, came into

existence and surgery took an honorable place beside medicine. Before this both "long gown" and "short gown" surgeons were held in but little esteem. Lorentz Heister (1623-1758), Boerhaave (1668-1738), Von Heller (1708-1777), John Hunter (1728-1793), John Bell (1763-1820) and Percival Pott contributed much to the development of the science of surgery in this transitional period.

A little later on we are wont to dwell on the work of Jenner (1749-1823). The prophetic paper of Oliver Wendell Holmes on Puerperal Fever was published in 1843. The name of Beaumont (1785-1853) stands out. Beaumont, in an isolated army post, gave us a knowledge of the digestive function that has stood ever since. We clearly realize that these men had a prophetic vision; that they visualized things that were true without methods of scientific analysis. Their sound reasoning, close observation and careful compilation were their only means to a conclusion. Time and instruments of precision have validated the work of these men. Let us not forget that with the exception of Harvey most great discoverers have been bitterly fought by their contemporaries. However, these men, I believe, represent in medicine the dawn of the golden Victorian age that was about to come.

Lister lived from 1827 to 1912. Modern surgery dates from Lister. Aseptic and antiseptic surgery made the use of the ligature safe, the control of hemorrhage certain, and permitted exploration of all the body cavities. Pasteur (1822-1895), a chemist, a man upon whom the geologists have as much claim as the doctors, contributed materially to Lister's principles, although Lister seems to have anticipated Pasteur. In substantiation of this statement I am going to read the following list of papers, together with their dates. Lister published a paper on the "Antiseptic Principles of the Practice of Surgery," in 1867, and numerous articles upon the same subject in the Lancet of the same year. Pasteur had contributed a communication on "Fermentation" in 1857-58. He further contributed a paper on "The Germ Theory and Its Application to Medicine and Surgery," but not until April, 1878. Another paper, "On the Extension of Germ Theory to the Etiology of Certain Common Diseases," was published by Pasteur in 1880. Pasteur himself prophesied that Lister had established a new field of surgery.

The doctors portrayed by Dickens amuse us. Possibly they represent the profession of the early forties. Dickens was keen to portray the petty foibles and personal characteristics of medical men. About a dozen varieties of medical men have been described by him. Their relation to the ideal medical man is about in proportion to that of a shyster lawyer Dickens describes to an advocate today. Dickens' indictment of the medical profession was less severe on the doctor than upon almost any of the other professions or vocations he portrays. It is my opinion that the English people of Dickens' time needed some pretty severe jolts.

It is indeed not strange that the Victorian age, the age of altruism and sincerity, should at last have brought forth such men as the portrayed doctor of the old school, MacLure. I graduated at a time when this book was new, and I sometimes have felt that it influenced the generation of men that followed. It is more probable that Ian MacLaren's pictures were only reflections of the times. For it has been my very good fortune to know many men of Dr. MacLure's type in so far as they were men of integrity, endowed with sound judgment, and thoroughly imbued with the sense of duty to the welfare of their patients. These men did not come from any one country. Scotland, Germany, Japan, France, Switzerland, Italy, Canada, and the United States have produced this sort of product. The Victorian age produced Florence Nightingale, who made the intelligent care of the sick possible. Soon the discoveries of Lister, Morton, Simpson, together with Virchow, the pathologist, became generally used.

The names of men in the medical profession of the Victorian age who have made indispensable contributions not only to science but to the relief of mankind as well, make a very long list. For the recognition and cure of syphilis we recall Hoffman and Schaudinn, Wassermann and Ehrlich; for all that *x*-ray implies, Roentgen; for the discovery of the underlying sense of position in space, Baranay; for the eye, Fuchs.

Bier, Israel, Korte, v. Bergman, Mikulicz, Schleich, v. Bardenheuer, Krause, Heinrich Braun, Wilms, v. Bruns, Kummel, Wertheim, v. Eiselsberg, and Sauerbruch stand for surgical advance in Germany and Austria. Scandinavians have given Lenander, John Berg, Ackermann, and Rovsing. Switzerland brings to our mind the names of Kocher and Roux with the pathologist Langhans. England gave MacEwen, Moynihan, Jones, Watson

Cheyne, Mayo Robson. France has produced Tuffier, Duval, and Doyen in surgery, and Laveran for the cause of malaria. International medicine brought forth Sali and Osler and Strumpl, names too great for any one country. Bacteriology has been applied to medicine by Koch, Ehrlich, and Behring. In America, Ephraim McDowell, Marion Sims, J. C. Warren, L. A. Sayre, Valentine Mott, Willard Parker, McBurney, W. H. Pancoast, Roswald Park, Austin Flint, John B. Murphy, Nicholas Senn, L. Gross, Horace Wells, Jacob Biglow, Christian Fenger, Henry Bowdich, B. N. Dudley, Trudeau, Flick, O'Dwyer, Carroll, and Stiles, as pioneers, have all contributed foundation stones to the magnificent institution whose purpose is the relief of mankind. I will not include the host of Americans working and writing today, with whose names you are all so familiar,—and partly because their work is in such close perspective. This patchy attempt to give the names of men is but a hasty effort and therefore incomplete.

While reviewing the work of our early American physicians and surgeons one is impressed with the direct manner in which they attack the problem before them. Their description often lacks the beautiful phraseology and graphic descriptions one finds in Sydenham's or Bell's writing. In a simple, direct manner they tell how they developed some new procedure that cured the patient and laid the foundation for further progress. Ether anesthesia, ovariotomy, animal ligatures, appendectomy, nephrectomy, cholecystectomy, intestinal anastomosis, cure of vesico-vaginal fistula, plaster jackets and casts, intubation for diphtheria, operations for epilepsy and brain abscess, application of extension in fractures, skin grafting, and eradication of yellow fever and hookworm are the achievements of these men.

It is not strange, though, that the caricatures of the profession should stand out above all their meritorious work in the minds of the laity. It is to be expected that many people should mistake the absurd situations and utterances coming not from the doctors but from actors playing a false part to be the principles of the medical profession.

Self-conceit, secrecy, and unwillingness to confide in our patients still persist, and have contributed much to make the world believe that a doctor loves gold; that he is a member of a closely affiliated medical trust; that he is bound by that mysterious thing known as a code of ethics, whose chief function is to cover incompetence that may be perfectly apparent to him. Some go so far as to even believe that the doctor is an executioner both of life and morals—further than this, to believe that the obliquities of mental vision in the past were peculiar attributes of the doctor. We are partly to blame for this. We should not permit people to lie about us with impunity. Before continuing on this line further I wish to return to my chronological plan.

We will now consider the doctor of the present day. When I spoke of the Victorian age I did not have in mind the exact period of time in which Victoria lived. I had in mind that the spirit of the Victorian age lasted until 1914. In that year the furies of hell were let loose. The war has been followed by the usual physical and mental deterioration that almost always comes. New problems confront the doctor. We speak of unrest and attribute many of our difficulties in every walk of life to this. What is unrest? It is a protest to establish the equality of men dreamed about since the days of Thomas More. But Thomas More either did not recognize the fact that all men are not equal, or he hoped in some way to produce a perfect race of men. There are no supermen, very few 100 per cent men, and a great many that hardly can be called men at all, if we consider man to be endowed with an intellect. Unrest is really a dissatisfaction with oneself or rather with one's possessions, and a desire to so change things that the environment be made to fit the individual rather than the individual master the environment. The products of unrest are departures from normal standards, dissatisfaction with existing conditions, desire to get the good things of life whether or not one has the necessary ability to exchange for them, disorganization, letting loose selfishness, unjust supremacy of the individual. Let us see what Utopia means when mankind is not yet sufficiently developed. I can illustrate this by the story of a dentist in Russia, graphically described in a series of articles by Eleanor Franklin Egan. Before the Russian Utopia this dentist had practised his profession with profit and honor. After it, he was compelled to live in a dirty room, to practise his profession, live, and study in the same filthy hole. They did allow him to boil his instruments in an old kerosene can with a little charcoal under it. That is the sole perquisite of his profession. His

property was taken away from him. His services belonged to all; everyone was entitled to them whether they had money or not,—hence he could demand no pay. On the other hand, materials for his maintenance were only to be obtained by paying a price. I hope that our most enthusiastic reformers will not put the medical profession in such a hole. This unrest makes the laborer begrudge payment for medical services, and he is perfectly willing to kill the goose to get the golden egg. Medical men do get large fees, but the acquirement of the ability to carry on the work costs many all they get. The public should understand the reasons for the "high cost of getting well." The profession has been profligate in its charities and some limit must be established or efficiency will be lowered.

I will next take up the questions that more particularly deal with our profession. The doctor is not particularly concerned with the numerous irregular "healing" methods because all through the ages he has known that quacks have blossomed for a time and then withered like weeds. This is true not because truth is supreme but because the quacks were not organized and the medical profession was. However, the organization of the medical profession today is largely on altruistic and educational lines. The American Medical Association is organized to fight things harmful to the public at large, to maintain educational standards and to demand efficiency on the part of the doctor. As a parental advisor it has not done so well. The medical graduates should be so controlled that efficiency is maintained. The recent graduate formerly went into the country and practised. He there learned his capacity or his limitations. He also made friends with the people and came in close personal touch with them. In course of time, if his general medical judgment was good enough to warrant it, he turned his attention to a specialty and, carrying his friends from the country to the city, he established himself there. Such was the life of our beloved James Dunn, and Nicholas Senn, and many others. Today a very large percentage of the recent graduates go immediately into specialties. The technique of the specialty is easy to learn; but the specialist must know the working of the very delicate machine we call the human body, and he must know that our art and our materials are very crude. The result of this is a very large number of technically trained specialists and a dearth of country doctors. A community with no doctor takes up with some other healer,—maybe a quack, maybe an honest man although not an M. D. His close contact soon makes him friends; and yet we wonder why legislatures do not recognize the solid worth of our profession. Not only this, the doctor is sometimes too lazy or too exalted to render close personal service that is just as necessary for his patient as a high sounding Latin label applied to his cases. New York state has 2,500 chiropractors and about 16,000 medical men. Twenty-five different varieties of non-medical healers exist. Not only so, but in addition every cult has its propaganda.

I recently read a letter from a quack whose chief qualification was cleverness with a typewriter. He had written to a young man who contemplated studying medicine. He plead with the boy to not so far debase himself as to enter the fold of such an abominable lot of creatures as the medical profession. These men, guilty of murder and abominations of all kinds, of booze-selling and dope-peddling, and almost all the crimes of the calendar, should not claim so decent a boy. If he must have money, let him study law or dentistry. These professions were somewhat respectable. This letter seemed, to me, humorous but it would just about win the heart of a good many people. I am sure of this, that the general influence and standards of the medical profession are such that we will have but few like Friedmann or Abrams, and I hope none.

There is also a feeling that the American Medical Association is not a representative body. Let us, in our own state, look into the foundation there is for that feeling. To do this we must indulge in a few figures. Population of Minnesota is given as 2,386,371. Number of counties, 86 Counties represented in component societies, 76. Number of societies, 37. Number of members, 1,602. Total physicians in the state, 2,628. This, on paper, looks good. But how do our delegates to the A. M. A. know the sentiment of its members? Only through the state house of delegates. How do the delegates themselves know their constituent societies? Only through the activity of the county societies. Then the policy of the American Medical Association should be dictated directly by the doctors. But the last link in the chain is a very weak one. Let us see why. I quote a letter that is illustrative:

August 3, 1922.

"Dear Dr. Savage:

"You have not heard because the secretary and myself have tried for over a year to get a meeting and we cannot get enough together. The Southern Minnesota and Central Minnesota societies have killed our local—dead—deader—deadest.

"If these three do not perfect or cooperate with a state organization at once, medicine will be lost in the legislature. It will have no voice to make appeal or demand.

"I wish you would pick out and request any member of our members to act as your committee. I will sign whatever is necessary. I would suggest Dr.—— of —— as chairman.

"What program are you going to inaugurate to save the local Minnesota Medical societies. They are doomed under the present conditions.

"Very truly yours,

"(Signed)————."

The societies mentioned in the above letter are pre-eminently scientific bodies not especially concerned in the practical problems of the profession. The county society should know the practical problems confronting the profession and by earnest effort do their part. The only way to make the American Medical Association a representative body is for each county society to awake to our real problem and do their duty. It is that lack of interest in the problems of the day that handicap the splendid work of the legislative committees, most vital to a successful campaign.

In closing, I want to say that the medical profession must remember that the golden days of Victoria are past, that we are living in an age of unrest, and the only possible remedy for the prevailing evils is cooperation and organization. The legislative committee has prepared a bill for the protection of humanity. Incidentally this vitally concerns the welfare of the medical profession. This bill will not pass the legislature unless intelligently supported by the medical profession. To do efficient work the county societies must not only be organized on paper (Dr. Savage informs me that thirty of the constituent societies are so organized) but must realize the problems that confront them and leave no stone unturned in the campaign. An awakening of the medical profession to its own mistakes in public policies must occur and a new spirit of enthusiasm and interest must be evoked.

THE DIAGNOSIS OF FOCAL INFECTION*

JUDSON DALAND, M.D.

Professor of Medicine, Graduate School of Medicine, University of Pennsylvania

Philadelphia, Pa.

The diagnosis of focal infection may be conveniently grouped under the following heads, as to whether the infection is: (1) acute, subacute, chronic or latent; (2) local or constitutional.

A focus of infection anywhere in the body may be primarily acute, as, for example, a tonsillitis. A latent or chronic focus of infection may become acute, as, for example, the redness, pain, swelling and fever that sometimes follow the prompt filling of a root after the removal of the pulp, the immediate causes of which are traumatism from preparing and filling the root canal, and the entrance of air inducing a change in oxygen tension. Acute infection may be secondary to a chronic or latent primary focus as, for example, a severe acute cholecystitis, secondary to chronic periapical dental infection.

The diagnosis of *acute* focal infection is usually comparatively easy, especially when the infection is located in the teeth, tonsils or superior maxillary sinuses, and ordinarily gives no great difficulty when situated in one of the remaining sinuses or mastoid.

A *subacute* focus of infection is usually afebrile, and presents an indefinite and variable group of symptoms, as, for example, a recurrent furunculosis, secondary to a pyorrheal pocket shut off from the buccal cavity. In acute and subacute focal infection, there may be a slight polymorphonuclear leucocytosis, whereas, in chronic focal infection there may be a lymphocytosis, a decrease in polymorphonuclear cells and a leucopenia. When the focus of infection is local, the organism only mildly pathogenic and the defense system of the body excellent, the blood may be normal.

Chronic focal infection frequently exists without recognizable symptoms, and the region affected may show nothing of diagnostic importance unless a special effort is made to secure certain signs of more or less diagnostic importance.

In chronic ethmoidal and sphenoidal sinusitis,

*Presented before the Southern Minnesota Medical Association, at Rochester, Minnesota, June 19, 1922.

the first examination may be negative, and repeated examinations may show on one occasion a purulent discharge containing hemolytic streptococci. An examination of the secretions obtained by irrigating the sinus and a roentgenogram are important aids in diagnosis. The diagnosis of infection of the antrum of Highmore is usually easy.

Latent focal infection may be local and only occasionally constitutional, is usually of long standing, producing indefinite symptoms of ill health and susceptibility to disease, especially catarrhal inflammation, and is usually diagnosed bacteriologically or by the presence of lymphocytosis, decreased polymorphonuclear cells and leucopenia. Focal infection is local when the infection is shut off from communication with the body. Many local infections are now known to be intermittently or continuously constitutional. Focal infection is constitutional when toxins or organisms or both enter the blood. Occasionally the *only* diagnostic sign that a focus of infection is producing systemic effect is lymphocytosis, decreased polymorphonuclear cells and leucopenia.

Most foci of infection are in the cavities of the head, and are usually dental after middle age and tonsillar in the young.

When multiple foci of infection exist in various parts of the body, one or more are apt to be overlooked. Unfortunately, many physicians are satisfied when they have discovered *one* focus of infection, whereas multiple foci are common. Many physicians experience mental difficulty in comprehending that a *small* infection around a single root of a tooth, or a remnant of diseased tonsil no larger than a pea, is capable of causing serious or fatal disease of an important or vital organ. They believe that diseases so important as arthritis, myocarditis, cholecystitis, peptic ulcer, appendicitis or nephritis, must be due to a *large* focus of infection, despite the known fact that there need be no relationship between the *size* of the focus and the seriousness of the secondary disease, but that the virulency, pathogenicity and selectivity of the organism and toxine, its entrance into the circulation and the susceptibility of the patient, are the governing factors, as has been so well proven by the brilliant researches of Dr. Edward C. Rosenow.

The belief that foci of infection must be purulent is still prevalent; nevertheless, it is definitely known that many dental foci of infection contain *no* pus and are composed of pathogenic organisms.

The influence, upon the course of focal infection, of intercurrent infections or gradual or sudden diminution in resistance, is still not fully understood.

Many dentists hold the erroneous opinion that a devitalized tooth, with an area of rarefaction around the apex of the root, causing *no* subjective pain nor pain on pressure over this root, *excludes infection.* Many laryngoloists are disposed to attach *no* importance to small remnants of tonsils left after a tonsillectomy, largely because of the *small* amount of tissue present, again illustrating the erroneous belief that a *small* amount of infection is incapable of doing a *large* amount of harm. The diagnosis of a focus of infection in the ethmoid or sphenoid may be difficult, but failure may be due to an insufficient number of re-examinations, or from omitting *x*-ray evidence.

Infective mastoiditis in the young, causing but few symptoms, frequently escapes diagnosis until the classical or what should be called the terminal symptoms appear.

When foci of infection exist simultaneously in different parts of the body it may be easy, difficult or impossible to know which is primary, as it is evident that any one of the foci may be primary or secondary. An infected tonsil may cause a sinusitis or a periapical infection of a devitalized root of a tooth and, vice versa, an infected root of a tooth may cause tonsillitis or sinusitis. A pyorrheal pocket around the lower third molar may cause tonsillitis by contiguity.

After the removal of a primary focus of infection the secondary focus may become primary.

Chronic or recurring myocarditis or cholecystitis may improve or disappear after the complete removal of the primary focus.

Non-Neisserian prostatitis is usually a secondary manifestation of focal infection and recurrences are common if the focus is overlooked, and recovery may occur if the primary focus is removed. It is probable that many cases of idiopathic enlargements of the prostate are due to unrecognized chronic focal infection.

Teeth.—Statistics show that 80 per cent of devitalized teeth are infected, and it is probable that many of these teeth were infected from the carious

process that necessitated the filling of the tooth and not that these teeth were infected by the dentist, although this also occurs. Neglect of the surgical principle that infections should be drained and not sealed has been the great error of dentistry. It is also true that properly filled devitalized teeth may slowly recover and later show no evidence of infection, but a subsequent infection from a focus of infection located elsewhere as, for example, in a pyorrheal pocket, another tooth, the tonsils or sinuses, may infect, by preference, the devitalized tooth. The proof of the infectivity of a tooth rests upon the classical symptoms and signs of systemic infection such as polyarthritis, tenosynovitis, myositis, neuritis, etc., with or without fever, in conjunction with lymphocytosis, a decrease in the polymorphonuclear cells, and leucopenia, and by identifying the organism from a culture. The pathogenicity of the organism may be determined by its effect upon a mouse, rabbit or guinea-pig. Clinical evidence is easily secured but the obtaining of materials for bacteriological evidence is difficult.

The small size of the pulp canal and the frequent occurrence of curved roots, usually make it impossible to secure materials from the periapical space for examination. Occasionally when an infected tooth is extracted, materials for culture may be obtained from the adjacent suspected root by curettage. On the whole, however, it is practically impossible to identify the organism before extracting infected teeth. Clinically it is important to state that very rarely, in my experience, is a tooth *suspected* of being infected, that does not show a pathogenic organism when removed.

When infected teeth are to be extracted, the physician and the exodontist must decide as to the anesthetic (gas, ether, local anesthesia or nerve blocking), the order in which the teeth are to be extracted, the number of extractions at one sitting and the interval between the extractions. If many diseased teeth are extracted at one sitting, serious systemic infection or death may follow. The bacteriologist should be present at the time of the extraction, so as to secure materials for culture as free from contamination as possible. If many teeth are to be removed, a prosthetic dentist should be consulted before the extraction, in order to determine the usefulness or uselessness of certain teeth from the standpoint of an artificial denture. It is often necessary to make a temporary plate before the extraction, in order to preserve appearances. Team work and frequent consultations are necessary in order to secure the best results.

The most frequent location of foci of infection after middle life is in the periapical dental region. Rarely is a vital root infective, although occasionally the region about the roots of a vital tooth may be infected from diseased adjacent roots. Occasionally the pulp in a sound tooth dies from unknown reasons, so that the absence of caries does not prove that the tooth is vital. The vitality of each tooth should be determined. Caries is the usual cause of devitalized teeth and in the past, unfortunately, many teeth have been devitalized in order to make abutments for bridges. It is *not* generally known that the root of a devitalized tooth is a favorite location for secondary infection, usually by the blood route, from infected teeth in other parts of the mouth, occasionally by contiguity, or from foci in other regions of the body.

As a rule, periapical dental infection exists without local symptoms. An alveolar abscess that freely drains usually causes no systemic infection. In certain cases of dental infection that have existed for ten or twenty years, subacute local symptoms may occasionally occur, but as a rule this form of chronic focal infection is without local symptoms. The dentist, having determined that the suspected tooth is devitalized, and if the root is not properly filled, may remove the pulp, fill the root canal, and if pain and swelling follow, and last more than a day or two, these symptoms may be interpreted as indicating preexisting infection.

A roentgenogram of *all* of the teeth and of the jaw where there are no teeth, is of great importance diagnostically, and the films should be arranged in two horizontal rows, in their normal anatomic relationship, and marked "left" and "right," so as to facilitate the study of each tooth and each root.

Many roentgenograms made by the average roentgenologist or dentist are unsatisfactory. The films are frequently so dark that it is impossible to detect small areas of rarefaction, the size and shape of the teeth may be grotesquely enlarged or the tips of the root may not appear on the film. A properly made roentgenogram should show with great definiteness the periapical regions, the alveolar processes, the relationship of teeth to each other, the presence of unextracted roots and im-

pacted or unerupted teeth and region favorable for the development of pyorrhea. As the roots of bicuspids and molars vary in length and direction, and one may be superimposed upon another, certain teeth require that additional films be made at different angles.

A typical area of refraction around the apex of a devitalized incisor or canine is highly diagnostic after due consideration has been given the history of the tooth, but owing to the increased thickness of the ramus of the jaw in the region of the molars, the increased amount of lime salts sometimes prevents the ray from showing areas of rarefaction around the roots of these teeth, so that the *absence* of areas of rarefaction in these regions is sometimes associated with well marked periapical infection. It should never be forgotten that a negative radiogram does not exclude infection. Occasionally infection occurs in an unextracted root or an unerupted tooth, and sometimes an area of infection occurs in the crotch between the roots of a cuspid or molar that cannot he revealed by the *x*-ray.

The mental foramen may sometimes be so situated on a film as to simulate an area of rarefaction around the tip of the root of a tooth.

A rather large experience shows that seldom is a tooth extracted unnecessarily, but, on the contrary, infected teeth often remain undiagnosed, even after the most minute and careful search.

A devitalized tooth is always predisposed to reinfection and is a constant menace.

Bacteriology.—The identity of micro-organisms is important in diagnosis, and a vaccine made therefrom may be valuable therapeutically. Most of the bacteriological work done under ordinary circumstances is very misleading, owing to carelessness in securing materials for culture, an undue loss of time, or carelessness in caring for the material before culturing, exposure to sunlight, desiccation, improper preparation of the specimen for transportation, the selection of media unsuited for the growth of the organism, or lack of knowledge in identifying organisms under scientifically exact conditions.

The crown of the tooth to be extracted is thoroughly cleansed, walled off by cotton from the buccal cavity, iodine is avoided, the tooth is then extracted with the minimum of injury to the alveolar processes and in such a manner as to prevent the root from becoming contaminated. Cultures should then be made from the roots immediately after extraction and if the tip is occupied by a granuloma, it is incised and a second culture made from its contents. The entire tooth is then placed in a culture tube. Immediately after the extraction of the tooth the dental surgeon lightly curettes the socket and the material thus secured is cultured. Various media are employed, the most satisfactory being blood agar. When the root of a tooth breaks the distal portion remains in the socket, it is impossible to make a culture without considerable contamination, whereas materials secured under favorable conditions often show almost a pure culture of the organism, with only a few contaminating organisms. One of the most important elements of this technique is that the bacteriologist, and the exodontist should work as a team, at the time of the extraction. When infected teeth or materials are secured by the dentist and placed in a culture tube and sent to a laboratory, a number of errors may occur which may prevent the bacteriologist from determining the predominating organism.

In my experience, the streptococcus hemolyticus occurs most frequently, the streptococcus viridans less frequently, and the ordinary streptococcus occasionally. In the mid-west I am informed that the streptococcus viridans is more frequently found than the streptococcus hemolyticus.

The vaccine is made from the predominating organism and the contaminating organisms are excluded. A vaccine made under these conditions possesses value, more especially to patients advanced in years, and in those whose defense system has been weakened by infection of many years duration, or by disease of vital or important organs. In young vigorous patients vaccine may be unnecessary.

Pyorrhea.—Pyorrhea is exceedingly common in adults, more especially after middle age, and almost always occurs when capped teeth or bridges are present. After many teeth are extracted, the unopposed teeth and those that have changed their direction are prone to pyorrhea. Ordinarily pyorrhea does not produce systemic disease. When, however, a pyorrheal pocket is formed beside a root, penetrating almost to the tip, and, owing to its location or obstruction is unable to drain, sys-

temic manifestations are common. When a pyorrhea pocket or an alveolar abscess drains freely, the process usually remains local, and seldom produces systemic disease. A focus of infection so located that it is shut off from the air usually contains micro-organisms possessing marked pathogenicity and selectivity. Rosenow has shown the extraordinary influence of varying oxygen tension in the production of virulent organisms. The diagnosis of pyorrhea as a focus of infection can usually be easily made by direct examination by a skilled dentist, aided by a roentgenogram.

Tonsil.—Although it is true that the tonsil is frequently a focus of infection in the young, it must not be forgotten that latent chronic infective tonsillitis is very common in middle age and advanced age. In early life the local and constitutional symptoms are apt to be frank, whereas late in life local symptoms are apt to be absent, but the systemic symptoms and signs may be typical. The diagnosis of acute tonsillitis in the young is easily made, and when systemic manifestations occur they are characteristic, the commonest syndrome being polyarthritis with fever, usually remittent, with evening exacerbations associated with sweating, with or without endo- or pericarditis, in association with a history of one or more attacks of acute tonsillitis. The tonsils are usually considerably hypertrophied and from the crypts may be expressed a thin milky fluid containing a streptococcus, usually of the hemolytic or viridans variety. Occasionally the cervical lymphatic glands are painful and swollen and a leucocyte count usually shows a polymorphonuclear leucocytosis.

In adults and late in life the systemic symptoms of tonsillar infection are usually less acute and fever is absent. Arthritis is usually sub-acute and more apt to involve the smaller joints. Myocarditis is more common than peri- or endocarditis or endarteritis. Ocasionally, the *only* manifestation is one of the following diseases—cholecystitis, nephritis, pyelo-nephritis with or without calculus, gastric or duodenal ulcer or appendicitis. These patients may give a history of recurring tonsillitis during adolescence and no attack for ten or fifteen years.

The presence of painless, indurated and enlarged cervical lymphatics is suggestive that the tonsils have been previously diseased and are infected, although frequently enlarged lymphatics cannot be discovered, either because they are absent or because they are not palpable. In about one-half of the cases, lymphocytosis and a decrease in the polymorphonuclear cells, with or without leucopenia, is present and is important diagnostically, but a normal leucocytic picture does not exclude infected tonsils. It is probable that infected tonsils at times are absolutely local and completely cut off from communication with the circulation, and therefore no change in the leucocytes could be expected, but these same tonsils may at intervals cause constitutional infection, because of intercurrent infections or diseases, such as influenza, typhoid fever, pneumonia, diabetes, cardiac or renal decompensation, or any condition that reduces the defense system of the body, such as malnutrition. Perhaps the commonest of all causes is an intercurrent infection.

When a vital organ is involved, such as the heart or kidneys, and reasonable clinical evidence exists that it is infective in origin, more especially if the polymorphonuclear cells are decreased, with lymphocytosis and leucopenia, and no other focus of infection is discoverable, the tonsils may be removed *on suspicion*, and a pathological and bacteriological examination of the excised tonsils will establish the correctness or incorrectness of the procedure. The pathogenicity of the micro-organism may be determined by its effect upon animals, and an autogenous vaccine is of value therapeutically, especially in the weak, emaciated, anemic and those advanced in years.

In those cases where an etiological diagnosis is all-important, and where evidence is insufficient, some diagnostic value may be given to a history of recurring attacks of tonsillitis, even though no attack has occurred for several years.

The tonsils may be considerably or moderately hypertrophied, normal in size, or small and buried, and frequently the anterior and posterior pillars are adherent to the tonsil. The anterior surface of the anterior pillars frequently presents a dark red and congested appearance. When these tonsils are subjected to pressure, some may yield no secretions, others show cheesy material or a thin milk-like fluid which, when cultured, usually shows the streptococcuc hemolyticus or viridans. The crypts are frequently dilated and, after having been emptied, materials secured from the bottom of the crypt, by a platinum loop, when cultured, show the streptococcus hemolyticus or viridans, and a

similar organism may be obtained from the surfaces of the tonsils, and the bottom of the spaces between the tonsils and the anterior and posterior pillars. A negative culture when the tonsil is infected may be due to closure of the crypts by adhesive inflammation or to a circumscribed intra- or retro-tonsillar abscess. The small, buried fibrotic tonsil may give no obvious sign of infection, and the diagnosis of its infectivity may rest entirely upon the exclusion of all other foci of infection, together with the clinical and leucocytic manifestations of systemic infection. When these tonsils are removed, dissected and cultured, a streptococcus is usually obtained. Occasionally the tonsil is diseased and the patient gives no history of ever having had an acute tonsillitis. We do not possess complete information as to the way in which the tonsils primarily become infected, but we do know that they may become infected secondarily from pyorrhea around the lower molars, especially the last molar, and from sinusitis, especially from the ethmoid and sphenoid. It is probable that in a very large number of cases the primary infection occurred in childhood or adolescence and was due to infected milk, cream or cheese, or from general infections such as scarlet fever, influenza, etc. The infected tonsils may produce generalized ill health, with transitory attacks of arthritis or neuritis over a period of twenty or more years. In such cases, the tonsillar infection is usually local or latent and only occasionally systemic.

More than forty years ago, only the projecting mass of hypertrophied tonsils were removed by a guillotine-like instrument; later the tonsil was removed more completely by means of a snare; and today the tonsil is usually completely removed, but operators still leave remnants of tonsil. Any remnant of a diseased tonsil may become a concealed focus of infection, the cicatricial tissue formed after the operation completely closing the crypts and follicles, thus imprisoning infective material. It is not necessary that the remnant should be large; a remnant of diseased tonsillar tissue not larger than a pea may produce systemic manifestations of infection.

Occasionally, infected adenoid tissue separate from the tonsil, located in the region of the plica triangularis, or a thin bed of diseased tonsil left after a tonsillectomy may cause systemic disease such as Bell's palsy or chronic parenchymatous nephritis. Here again, the laryngologist, like the dental surgeon, sometimes fails to appreciate the danger to the patient because of the *small* amount of diseased tissue present. The virulency, pathogenicity and specificity of the micro-organism and not the size of the diseased tissue, is all-important. Enlarged lingual tonsils and glands upon the posterior wall of the pharynx may become foci of infection and when cultured have shown the streptococcus hemolyticus. When infected tonsils and teeth coexist, better results follow a tonsillectomy if the teeth are first removed.

In chronic myocarditis or chronic nephritis, with decompensation, where the prognosis is serious, it is obviously more important to remove foci of infection *on suspicion*, than in a patient where there is only slight involvement of one or two small joints. In the first instance the patient cannot be permitted to assume the risk of allowing a tonsil or tooth suspected of infection to remain even though the evidence of its infectivity be insufficient to make a positive diagnosis; whereas, in the second instance, a tonsil or a tooth may be held under observation.

When all foci of infection are removed, the symptoms as a rule slowly ameliorate and disappear. Occasionally severe sacroiliac pain on motion, lasting for a year, pain in peripheral nerves of long duration, or cardiac arrhythmia of several months' duration, may disappear in twenty-four or forty-eight hours.

When all foci of infection have been removed the diagnostic leucocytic picture of lymphocytosis, decrease in polymorphonuclear cells and leucopenia may, under favorable conditions, disappear within two months and, under unfavorable conditions, may require three or four months. When this leucocytic picture persists, or if it returns after a temporary absence, it is an evidence that all foci of infection have not been removed.

Anemia, which is frequently associated with focal infection, slowly improves when all foci of infection are removed, even when no drugs are employed.

Although the great majority of foci of infection are in the head cavities, it is important to search for evidences of infection, even though symptoms be absent, in the genito-urinary tract of both sexes, more especially the prostate and seminal vesicles, the gastro-intestinal tract, the gall bladder, appendix, bones and joints.

The recognition of the association of focal infection with syphilis, diabetes and alcoholism is important therapeutically.

One year ago a statistical study* was made of 165 cases of chronic focal infection in adults and the conclusions were as follows: Small cell lymphocytosis with a corresponding decrease in polymorphonuclear cells is an important diagnostic sign of focal infection, the value of which is increased when leucopenia exists.

Lymphocytosis indicates that toxins or bacteria or both are entering the blood.

Lymphocytosis occurred only twice in 100 cases of chronic disease where no focal infection could be discovered.

The experience of the past year has confirmed these conclusions.

The combination of lymphocytosis, decrease in polymorphonuclear cells and leucopenia may be considered as a diagnostic leucocytic picture present in about one-half of the cases of focal infection. This diagnostic leucocytic picture in doubtful cases stimulates search for the undiscovered focus of infection, encourages prompt and radical surgical treatment, thus preventing more serious complications, warns us when all foci of infection have not been removed and is often the only way to determine latent infection or when a local focus of infection is systemic.

The object of this paper is to call attention to frequency of failure to diagnose:

1. Infected teeth;
2. Remnants of infected tonsils;
3. Infected adenoid tissue in the plica triangularis;
4. Infected lingual tonsils;
5. Infected pharyngeal glands;
6. Infected ethmoid or sphenoid sinuses;
7. Infected prostate or seminal vesicles;

Failure to diagnose focal infection occasionally occurs even though the examination is made by specialists in rhino-laryngology, urology, dentistry and roentgenology.

I also desire to *emphasize* the value of lymphocytosis, decreased polymorphonuclear cells and leucopenia in the diagnosis and management of focal infection.

*Leucocytosis as a diagnostic sign of chronic perapical infection in adults. Jour. A. M. A., Oct. 28, 1921.

THE COINCIDENCE OF SHINGLES AND CHICKEN-POX*

C. Eugene Riggs, M.D.
St. Paul, Minn.

At first thought it would appear that the relationship existing between herpes zoster and varicella, supposedly distinct diseases, was coincidence, their interesting concurrence from time to time being simply accidental. The diagnostician of the New York City Health Department, New York City, states that he has seen over 3,000 cases of chicken-pox but has never seen any case of herpes associated with it (Dana). This relationship in my mind was purely of an academic nature until after reading Dr. James Taylor's *Neurological Jottings*, and shortly after, having a case of herpes zoster facialis in my family, which two weeks later was followed by an attack of varicella in a grandchild.

A reference to the literature, which is chiefly European, showed that these coincidences occurred too frequently to be simply interesting or coincidental. Surely, as Ker states, they are puzzling, yet are we any nearer accepting the contention of Bokay[2] (Budapest) twenty-nine years ago that these diseases possess a common virus and are intercommunicable? Herpes zoster is no modern disease; it is hoary with antiquity; it is the zona of the Greeks and the cingula of the Romans.

As to the etiology of idiopathic herpes, we are still in doubt; yet it is generally believed to arise from a specific cause. Richard Bright, according to Gowers and James Taylor, was the first to suggest that herpes zoster was of nervous origin. While Von Bärensprung[3] in 1863 pointed out that it was a disease of the sensory ganglia of the posterior roots, it remained for Head and Campbell[4] to place its pathology on a firm basis. They demonstrated pathologically the presence of organisms in the nerve radicles involved and asserted that herpes zoster was an acute specific disease. Because of its similarity to acute poliomyelitis, they gave it the unfortunate name of posterior myelitis; Ramsey Hunt's researches[5] showing that the peripheral ganglia of the 7th, 8th, 9th and 10th cranial nerves are subject to the inflammation of herpes zoster, add greatly to the belief that it is an acute infectious disease, caused by a specific agent

*Presented at the American Neurological Association, Washington, D. C., May 4, 1922.

(Sharpe[6]). Rosenow and Oftedal[7] have isolated streptococci from tonsils, pyorrheal abscesses, sputum and spinal fluid from a case suffering from herpes and produced herpes with corresponding ganglionic lesions by animal inoculation with the strains of the organisms. Histological examination in Nyary's case showed an infarct due to thrombosis of a small artery in the ganglion on the third cervical root; this would tend to confirm the ganglionic origin of herpes zoster.

Hunt has demonstrated that the inflammation may extend to the adjacent ganglia both above and below although the eruption is confined to the skin area supplied by the ganglion originally affected. This, says Sharpe, explains those cases in which the eruption is in the zone of one ganglion and there are complications which can be attributed only to the involvement of other ganglia. The simultaneous involvement of the sensory ganglia of the cranial nerves is not uncommon and the great variety of resultant clinical symptoms are thus easily explained. Recurrent attacks of herpes zoster are rare. Head and Campbell[8] reported four such cases out of more than four hundred patients. James Taylor[9] has seen three cases, one of his patients having had four distinct attacks. Mrs. Riggs suffered from an attack of right thoracic herpes in her fourteenth year, this being her first attack. The literature would seem to indicate that herpes may assume a mildly epidemic form. Elliott[10] reports four cases in a population of a thousand. A Parisian, says Jolly[11], suffering from herpes zoster, went to a village in Provence; within six weeks there were seven cases; there were no cases before his arrival. Kaposi records an epidemic of forty cases lasting from November, 1888, to February, 1899. Epidemics have also been observed by Cressy and E. J. Bruce.

An epidemic of herpes has been observed to occur side by side with one of varicella. The months in which it is most likely to occur, according to Wise[12], are September, February and March. Does herpes possess infectivity? Hall's case[13] certainly would suggest this. X suffered from herpes zoster of the right upper fifth nerve. January 19, 1921, he spent the night at his sister's house; she was convalescing from a herpes of the trunk. The first symptoms developed on the 22nd, the eruption occurring on the 25th. Bocmeister has observed two cases developing (one within three days) after contact with a thoracic zoster (Bassoe). Gibbons believes that herpes zoster can remain infectious for at least seven days from the date of eruption.

Taylor's neurological note interested me greatly and when a few months later this singular coincidence occurred in my own family, I thought it worth reporting. Last November (1920), Mrs. Riggs developed herpes zoster of the left face, affecting chiefly the second and third branch of the fifth nerve. There were a few scattered spots in the ophthalmic area, a few vesicles were observed in the external ear (the drum escaping), the mucous membrane of the mouth supplied by the superior maxillary and the inferior maxillary branches, also the left half of the tongue, was covered with the herpetic eruption, which caused great suffering; the teeth were exquisitely painful and after recovery several cavities were found which were not present before the illness. Over the area of the left chin the vesicles were practically confluent and, where the skin approached the mucous membrane of the lip, formed a scab. Distressingly painful as cephalic herpes is, there were no complications and recovery was uneventful aside from an aggravating paresthesia over the affected area, which still persists. About two weeks after the inception of Mrs. Riggs' illness, a grandchild developed a typical case of chicken-pox; the interesting fact is that there was no chicken-pox around and she had not been anywhere where she could possibly have contracted it. After the usual incubation period, her brother, in turn, developed the disease.

Some months since, I wrote a letter of inquiry to representative American internists, pediatrists and neurologists. None had ever seen such an association or had a similar experience. Dr. Frank Billings says, "My own clinical experience and for years in a large family practice has not afforded me a similar experience; in spite of the observations made by Dr. Taylor and by you it does not strike me as a probable truth of any such relationship between herpes and chicken-pox." Dr. Alfred F. Hess (New York) says, "There seems to be some connection between the two disorders, but evidently it is not close from a clinical standpoint." Such observers, on the other hand, as LeFeuvre[14], Cranston Low[15], McDougall and Hartill[16] are of the opinion that the virus of herpes and varicella is one and the same thing. Low advances the ingenious theory that the herpetic infection spreads from the nose along the lymphatics to the olfactory nerves and the cerebrospinal fluid, thus affecting

the spinal ganglia, whereas in varicella it is probably a blood infection. Why at one time it should enter the blood stream giving rise to a skin affection —chicken-pox—and at another it should reach the nervous system through the nose along the lymphatics to the olfactory nerves awaits explanation. In the combined cases it is assumed that the infective agent reaches the spinal ganglia first and a few days later invades the general circulation. "Shingles," says LeFeuvre, "should be definitely recognized not only as an infectious disease, but also one liable under certain unknown conditions to become a starting point for a chicken-pox epidemic."

For convenience in discussion, this subject may be grouped under three heads:

A. Herpes zoster followed by chicken-pox within the usually accepted period of incubation of twenty-one days;

B. Chicken-pox followed by herpes;

C. Generalized herpes and herpes and chicken-pox existing in the same individual at the same time.

A. According to Kerin, 1920, there were fifty-six cases in this group. Last February, Carver[17] reported the analysis of fifty cases in which the interval between the appearance of the herpetic eruption in the one patient and that of the varicella in the other, varied from eight to twenty-one days. In the literature since, I have been able to find fourteen additional cases; there are doubtless other cases I have overlooked. In Group A (my case and as for that most of the cases fall into this group), there are eight adults; among Carver's cases varicella among adults is rare. From 1870 to 1892 there was admitted into the Municipal Hospital of the City of Philadelphia, thirty-five cases of adult varicella (S. Chamberg). Fagge[18] says that it seldom occurs in children over ten years old. Some writers state that they have never seen a case, but that it exists I can personally testify as I had a very severe attack after I was twenty-five years old. Von Gemer[19] has analyzed 29,250 cases of chicken-pox and finds 98.22 per cent occurred before the fifteenth year. The usual thing is for the adult to have the shingles and the child the chicken-pox. When herpes zoster is followed by chicken-pox in the same person, the latter may give rise to either disease (Kraus).

B. Chicken-pox, followed by herpes in another individual, is of rare occurrence. I have collated thirteen cases. LeFeuvre has reported four cases (Ker); Heard[20] one—a grandfather living in the same house with a grandchild developed herpes over the second costal cartilage on the left side—twenty-two days after chicken-pox had appeared in the child. Dando's cases, although interesting, may be regarded as coincidences. The boy of Aikman on whose body the remnants of a varicella rash still were present, returned to school. Seven days later his teacher, a young woman of thirty-two years of age who had never had varicella, developed a right thoracic herpes zoster. In Guy's Hospital Gazette, May 24, 1913, it is stated that a boy aged thirteen years contracted a herpes zoster two and one-half weeks after exposure to varicella infection. According to Taylor, a Dr. Brown, who had been attending a case of shingles, contracted an attack of thoracic herpes; his daughter two weeks later came down with a mild case of chicken-pox. It is important to note that Brown's patient had been exposed to a varicella infection. Evans[21] reports a case of a child that manifested herpes a week after her sister had developed chicken-pox. During their convalescence the third child came down with varicella. He regarded herpes in the second child as a link between the two cases of chicken-pox. Feer[22] reports a case of herpes in a boy of nine who had been exposed to chicken-pox two weeks previously. Seventeen and twenty days later chicken-pox developed in two children who had been in contact with the herpes zoster. Gara[23] also reports two cases of chicken-pox in a family of three children which was followed two weeks afterwards by herpes zoster in the third. Abrahamson (Dublin) observed typical attacks of herpes zoster in the mother of a little girl and her maid a week after the child had recovered from chicken-pox. Heatherly's case also falls under this group. Elliott[24] reports a series of cases of herpes-varicella association which he thinks proves that not only may varicella be contracted from herpes but that the converse is also true.

The number of cases in this group, according to Ker, is so small that the theory of coincidence so far as they are concerned presents no special difficulty. The fact is, however, that one accurately reported case definitely settles the classification. McEwen states the matter fairly when he says, "If zoster can lead to varicella, why should not varicella lead to zoster?"

C. The term, "generalized herpes," is used very

carelessly in literature, being hopelessly confused with the concurrent form. Since with our present knowledge we are unable to distinguish between these two conditions, necessity compels us for the present, at least, to classify them in the same group. McEwen says that he has been able to find twenty-five reported cases of the generalized type. Dr. Taylor states that he has seen in a woman of eighty a herpes of three distributions, the eruption in these three cases occurring at the same time in the three areas. The surprising thing is that since herpes is an acute infection there is not a more general involvement of the posterior root ganglia producing multiple areas of zoster lesions. The tendency to involve the adjacent ganglia in the cephalic extremity is well known and it is in this way we explain those cases of herpes zoster, *sine herpete*, i.e., an absence of eruption with the presence of pain and possibly paretic nervous disturbance. The case of C, reported by Schamberg[25], is an excellent example of the generalized type; he has observed two cases, both elderly men. November 25, 1909, C began to suffer pain in the left scapular region; on the 28th there occurred an extensive eruption covering the left scapular region, the left pectoral region and the inside of the left arm. On November 29th, a scattered eruption was observed on various parts of the body. There were about 500 lesions in all; most of the eruptive elements were papular but here and there distinct herpetic vesicles were observed containing clear and occasionally hemorrhagic fluid. Some lesions were characteristically umbilicated. The palmar surface of the left hand exhibited some papules and a number of abortive vesicles. The temperature was practically normal and the itching was slight.

The following case of Ker[26] is without doubt a generalized herpes. A man fifty-five years old was sent to the hospital as a small-pox suspect. There were fever, shivering, pain in the small of the back; a few dry vesicular lesions were observed on the scalp, one or two on the face, several on the trunk were filled and vesicular in appearance, while others were dry and crusted. There was a very suggestive oval crust on the right shoulder blade; only one vesicle was observed below the elbow; there were none on the legs; around the arm on the left side was a profuse eruption of typical herpes with some outlying vesicles which were identical in appearance with one or two noticed in the sacral region. A man[27], eighty years old, was suddenly seized with a severe pain with definite tenderness along the course of the external popliteal nerve. Three days later small papules, evenly distributed, appeared over the trunk, shoulders, arms and back of both thighs; by the next day the rash had become vesicular; also new papules showed themselves in the same distribution with the addition of some over both legs. The appearance of the rash was indistinguishable from that of a chicken-pox of moderate severity. Five days later an intense herpetic eruption appeared on the left buttock and leg in two well-marked lines and over the sole of the left foot in a definite line. The entire leg was painful, while the acute pain at the original site had diminished. Six weeks later there were occasional shooting pains over the area of the distribution; this was also hyperalgesic. There was no previous history of herpes or chicken-pox. The patient had been previously taking two minims of Liquor Arsenicalis three times daily. The assertion that in herpes no eruption occurs on the palms of the hands or the soles of the feet is shown by the last two cases to be incorrect.

The "aberrant vesicles" of Tenneson[28] resemble the zoster group. They occur irregularly, widely separated from each other, are present in nine out of ten cases and are distributed over the entire body. Extensive zoster always and moderate zoster usually develop these vesicles (Molinie[29]). Fasal[30] suggests that the term "aberrant vesicles" be limited to lesions in the neighborhood of the zoster and that herpes zoster with generalized eruption be applied to the more extensive distribution, indicating that the second rash is not necessarily a zoster.

The following cases are good examples of the concurrent form, i.e., the appearance of herpes zoster and chicken-pox in the same individual. LeFeuvre has reported four cases. He thinks this type indicates that we have to deal with one disease for which he suggests the name "varicella herpetica." The earliest record of the double eruption, according to him, was made by Pundsechn in the Wiener Medizinische Presse of 1865. He emphasizes two points: (1) when both eruptions appear in the same individual the herpetic invariably precedes the varicellar; (2) there is a constant interval of two to five days between the eruptions. This, however, can only be regarded as an approximate estimate of the time of the rash's appearance. The dogmatic assertion that the herpetic eruption invariably precedes that of varicella is discredited

by Lampe's case where the herpes zoster developed during an attack of chicken-pox. There was also an associated paralysis of the muscles of the abdominal wall and the diaphragm. Fairbanks[31] (New York) reports a little sister five years of age as developing an attack of herpes zoster between the sixth and ninth thoracic segments about two weeks after she contracted chicken-pox. Low cites the case of a woman of 40, in whom herpes zoster was followed in two weeks by chicken-pox.

Goldberg and Francis[32] report the history of three patients who had herpes zoster with a simultaneous chicken-pox. Hill[33] reports a case of herpes of the ophthalmic branch of the right fifth nerve, which within six days developed a general varicellar eruption on the trunk, upper and lower limbs. Elkington's[34] patient suffered from a herpes of the 5th and 6th right dorsal root areas; three days later two dozen macular papules and vesicles appeared on the trunk, shoulder and buttocks; six days afterward 100 vesicles could be counted, the face having become involved. Hall's[35] patient manifested a herpes of the left anterior crural nerve; several days later there occurred a typical varicellar rash on scalp, trunk and limbs. Ker's patient, a girl, developed a typical herpes patch over the left shoulder-blade; the next day a few characteristic varicellar patches appeared in the neighborhood; there were several on the right side of the back; she was sent to a chicken-pox ward but did not develop the disease. One of the children, however, who had been exposed by her, did so. In McEwen's[36] case a man manifested a zoster involving the left first and second branches of the fifth nerve; a typical varicellar eruption occurred five days later; ten days afterward a child, who had been exposed, came down with chicken-pox. Webber's[37] patient suffered from leukemia. Two weeks after the administration of arsenic there occurred a typical zoster of the right shoulder; five days later there was a scant and generalized eruption of varicellar-like spots. Ten days after the appearance of the herpes, a four-year-old boy in the same ward came down with chicken-pox. Webber believed that the zoster and rash was caused by the arsenic, but the occurrence of varicella in the boy absolutely eliminated the possibility of a secondary zoster. Corlett[38] reports four cases of herpes zoster accompanied by a varicellar rash. He regarded these cases as unique because of the association of these two eruptions.

Head[39] records a case of herpes zoster in a boy, corresponding to the fifth dorsal nerve, which was followed in twenty-four hours by an eruption of chicken-pox. Some ten years ago Ormsby observed a case of herpes zoster of the face and scalp, which four days later developed a generalized varicellar-like eruption.

There are twenty-two cases of the concurrent type. In those of Fairbanks and Low, the interval is longer, not within a week as in the other cases of the concurrent affection. "This," says Ker, "is difficult to explain either on the theory of a generalized herpes or an initial herpetic distribution."

The simultaneous attacks of herpes and chicken-pox in different individuals have been reported by Law, Oakes and Gray[40]. The cases have been few, the probability of coincidence, according to Ker, great. Two of the cases to which I have referred had taken arsenic prior to the appearance of the herpes with its associated generalized varicellar rash. In Webber's case, as already stated, the eruption was undoubtedly that of a true varicella. His second case, as well as that of McNaughton, had, in like manner, received arsenic prior to the development of the combined herpes-varicellar manifestations. There is no note of any subsequent varicella eruption in other persons. That carbon monoxide, arsenic or other chemical poisons can cause disease of the sensory ganglia there can be no doubt. The same is equally true of focal infective processes, and the acute infections. The prevalence of herpes zoster during epidemics of acute poliomyelitis and epidemics of cerebro-spinal meningitis has been observed, as has also its occurrence in tuberculous meningitis and lethargic encephalitis. Lingenfelter has noted its presence in small-pox; tumor of the cord, disease of the spine, pneumonia are also causes. There are many expressions of secondary herpes absolutely separate and distinct from that acute and definite infection that a consensus of opinion has designated herpes zoster. When considering the relation between herpes and varicella, one must bear in mind Cantor's[41] interesting statement that on Christmas Island, Straits Settlements, for a period of twenty years or more, the statistics of disease show that while herpes zoster has been comparatively common, varicella has been unknown. The population is mixed, i.e., Europeans, Indians, Malays and Chinese, and has varied between 500 and 1,500. On

the mainland varicella has occurred with ordinary frequency; he assumes that the micro-organism of chicken-pox differs at least in degree from that of herpes zoster. The absence of varicella on Christmas Island is an interesting observation, yet this paper makes perfectly clear three things—that in more than sixty cases varicella has occurred within twenty-one days after contact with herpes zoster; that in thirteen patients herpes zoster has developed in cases after exposure to chicken-pox and finally that the concurrence of these two diseases is a matter of repeated observation. There is one point of similarity between these two diseases, i.e., the rarity of their recurrence. In one of Dr. James Taylor's patients there were four distinct attacks. Osler has observed three attacks of chicken-pox in the same case; Schamberg has also seen it recur, while such experienced observers as Drs. Morse and Talbot of Boston and Drs. Holt and Hess of New York have never seen it recur the second time. I had hoped to find from the investigations of the spinal fluid in these diseases some data that might throw light on this interesting coincidence, but unfortunately no work along this line has been done. Dr. Schaller[42] (San Francisco) has examined eleven non-luetic cases; there were no attempts at culture or examinations for bacteria. In five of these eleven cases, there was a cellular increase; the globulin was negative or but slightly increased.

The contention of Low, LeFeuvre and others that the virus of herpes zoster and varicella is one and the same remains to be proved, but that a close connection, as Taylor phrases it, does exist is beyond the question of a doubt. The solution of this, like most of the problems of medicine, rests with the general practitioner. The utter barrenness of American literature with reference to this subject is startling. Of all these preceding references only six are American. If they have occurred they have certainly not been recorded. A brief history of such a case should be reported to a representative medical journal so that from an accumulation of many repeated observations the question of relationship or coincidence may be definitely settled. One fact I would emphasize—that while herpes in young children is without pain or at the most there is only a little numbness or tingling, in advanced age an excruciating neuralgia may persist until death, and the possibility of chicken-pox in a child being followed by herpes in an exposed elderly person must not be overlooked.

BIBLIOGRAPHY

1. Taylor, James: Neurological jottings. Brit. Med. Jour., Sept. 18, 1920.
2. Bokay, V.: Etiological relation between varicella and herpes zoster. Orvosihetil, 1909, Series 3, vol. 1, 736-738.
3. Von Bärensprung: Die gürtelkrankheit. Annalendes Charitè-Krankenhauses zu Berlin, 1861, IX, part 2, pp. 40; 1862 X, part 1, pp. 37; 1863 XI, part 2, pp. 96.
4. Head & Campbell: Pathology of herpes zoster and its bearing on sensory localization. Brain, London, 1900, XXIII, 353 pp.
5. Hunt, J. R.: Herpetic inflammations of the geniculate ganglion; a new syndrome and its complications. Trans. Am. Neurol. Assoc. 1906. Journ. Nerv. & Ment. Dis 1907, XXIV, 73. Jour. A. M. A. 1909, III, 1456. Am. Jour. Med. Sc. 1908, CXXXVI, 226. Arch. Int. Med. 1910, V, 631.
6. Sharpe, Norman: Herpes zoster of the cephalic extremity with a special reference to the geniculate auditory glossopharyngeal and vagal syndrome. Am. Jour. Med. Sc. 1915, CXLIX, 725.
7. Rosenow & Oftedal: The etiology and experimental production of herpes zoster. Jour. A. M. A., June 12, 1915.
8. Head & Campbell: The pathology of herpes zoster and its bearing on sensory localization; report four recurrences in 400 patients. Brain, Part III, 1900, XXIII, 353.
9. Taylor, James: Neurological jottings. Brit. Med. Jour., Feb. 28, 1920.
10. Elliott, E. L.: Herpes and varicella. Brit. Med. Jour., Feb. 26, 1921.
11. Rist, E.: Jolly's Thesis. Dermat. IV, p. 919, 1904.
12. Wise, Howard: Herpes and varicella. Brit. Med. Jour., Aug. 30, 1913.
13. Hall, J. Arthur: Herpes and varicella. Brit. Med. Jour., Feb. 19, 1921.
14. LeFeuvre, W. P.: 1. A plea for the recognition of a common origin for shingles and chicken-pox. Brit. Jour. Derm., London, 1917, XXIX, 253-262. 2. Aberrant vesicles of herpes zoster. Med. Jour. So. Africa, XIII, 133, March, 1918. 3. Herpes zoster and varicella. Med. Jour. So. Africa, Johannesb., 1914, IX, 177-179. 4. Varicella herpetica. Guy's Hosp. Gaz., XXXII, 101, 1918.
15. Low, R. Cranston: Herpes zoster; cause and association with varicella. Brit. Med. Jour., Jan. 25, 1919.
16. Hartill, S.: Herpes and varicella. Brit. Med. Jour., Feb. 19, 1921.
17. Carver, A. E.: The herpes-varicellar infection. Brit. Med. Jour., Feb. 12, 1921.

18. Fagge, C. Hilton: Textbook of medicine, VII, 1017-21.

19. Tyzzer, E. E.: The histology of the skin lesions in varicella. Jour. Med. Res., IX; 1906.

20. Heard, R. L.: Herpes and varicella. Brit. Med. Jour., March 5, 1921.

21. Stenner, Evans T.: Herpes-varicella. Brit. Med. Jour., March 12, 1921.

22. Feer, E.: Chicken-pox and herpes zoster. Schneiserische med. Wochenschr., Jan. 15, 1920, Vol. 50, No. 3, pp. 41. Abstracted in Jour. A. M. A., Mar. 27, 1920.

23. Bruijning, F. O.: Quotes Gara. No reference. Nederlandsch Tijd. V., Genus Kunde, Sept. 20, II, No. 12, 1919.

24. Elliott, E. L.: Herpes and varicella. Brit. Med. Jour., Feb. 26, 1921.

25. Schamberg, J. Frank: Generalized herpes. Jour. A. M. A., Feb. 12, 1910.

26. Ker, B. Claud: Herpes and chicken-pox. Lancet, Aug. 14, 1920.

27. McNaughton, Stewart: Generalized herpes or chicken-pox. Lancet, Sept. 4, 1920.

28. Tenneson, H.: Traitè clinique de dermatologie, Paris, D. Doin, 1893, p. 112.

29. Molinie, J.: Generalized herpes. Theses de Paris, No. 97, 1895-96.

30. Fasal, Hugo: Herpes zoster generalisatus, Arch. Derm. and Syph., 1909, Vol. 95, p. 27.

31. Kraus, M. Walter: The relation of herpes zoster to chicken-pox. N. Y. Med. Jour., Aug. 3, 1921.

32. Goldberg and Francis: Herpes zoster and chicken-pox. Jour. A. M. A., Apr. 13, LXX, No. 15, p. 1061, 1918.

33. Hill, Rowland: Concurrent herpes zoster and varicella. Brit. Med. Jour., Feb. 26, 1921.

34. Elkington, G. E.: Herpes and varicella. Brit. Med. Jour., June 18, 1921.

35. Hall, Donald: Herpes and varicella. Brit. Med. Jour., May 7, 1921.

36. McEwen, Ernest L.: The association of herpes zoster and varicella. Arch. Derm. & Syph., 1920, II, p. 205.

37. Webber, P. Parks: Herpes zoster. Int. Clinics, III, 26th series.

38. Corlett, W. T.: Varicella accompanying herpes zoster. Jour. Cutan. Dis., April, 1905, XXIII.

39. Head, Henry: Zoster or zona, Allbutts' System of Med., VIII, p. 630, 1901.

40. Oakes, Henry: Herpes zoster and varicella. Brit. Med. Jour., Aug. 30, 1913.

41. Cantor, S. J.: Herpes and varicella. Brit. Med. Jour., Sept. 24, 1921.

42. Schaller, W. F.: Cerebrospinal fluid findings in herpes zoster. Calif. State Jour. Med., Oct., 1918.

HYPERHIDROSIS OF THE CHEEK ASSOCIATED WITH INJURY TO THE PAROTID REGION

GORDON B. NEW
Section on Laryngology, Oral and Plastic Surgery,
and
HERMANN E. BOZER,
Section on Otolaryngology and Rhinology,
Mayo Clinic
Rochester, Minnesota

Three patients have been examined in the Mayo Clinic who have had a hypersecretion of sweat over the cheek during the taking of foods or other stimulation of the salivary secretion. Each patient gave a history of having previously been injured in the parotid region.

Hyperhidrosis is a condition of excessive secretion of the sudoriparous glands. Generally, the secretion does not in any way differ from normal sweat, except in certain cases in which it is fetid, acid, or alkalin. It may be general, as when it occurs as a concomitant of certain diseases, such as tuberculosis, rheumatism, or Graves' disease. More commonly the condition is local, being confined to a part of the body, as the hands, feet, or face. Hyperhidrosis may be of any degree of severity, ranging from a slight increase of such secretion to such an excess that it pours in streams from the body. It may be constant, but, as a rule, the attacks are paroxysmal, and the condition is excited and increased by some external stimulus.

Localized hyperhidrosis, not uncommon in several of its forms, often presents a very interesting appearance, especially when it is confined to the face or neck, and is reflexly influenced by various stimuli.

REPORT OF CASES

Case 1 (A365267). Mrs. R. C. H., aged twenty-five years, came to the Clinic July 18, 1921, because of chronic purulent discharge into the mouth and marked sweating over the left side of the face, both brought on by eating any sapid food. Three years before, during an attack of influenza, an acute swelling, which had developed over the left parotid region, was lanced and an abscess drained for six weeks. The patient had experienced no further trouble until one year later, when she noticed pus draining into her mouth; this had persisted in various degrees. The sweating, which was noticed after the first attack of acute parotitis, had always

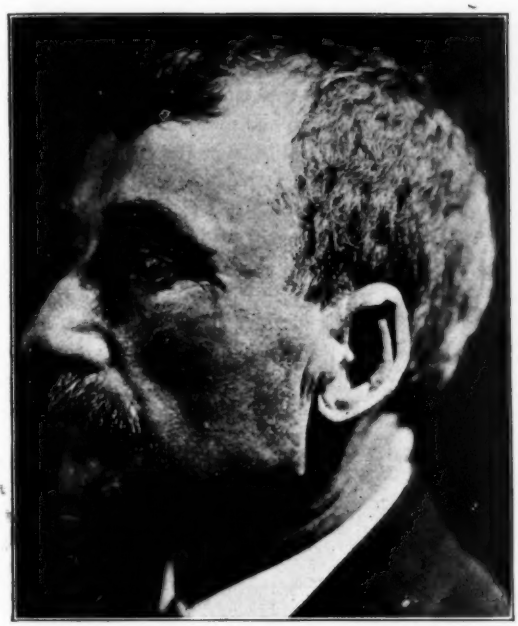


Fig. 1 (Case A354164).—Area of sweating over the left cheek following the taking of food.

been confined to the left side of the face and was brought on by eating. At other times she was not bothered by her affection. Since the attack of parotitis, she had often noticed fine twitchings of the muscles of the left side of the face.

Examination revealed a linear scar just posterior to the angle of the left lower jaw. There was no induration of the parotid gland, but pus could be expressed into the mouth from Stenson's duct on the left. A few minutes after eating acid fruit there was marked sweating on the left side of the face, extending from the hair line to the lower jaw, and anteriorly from the auricle nearly to the angle of the mouth.

Case 2 (A354164). Mr. M. T., aged fifty-one years, came to the Clinic April 4, 1921, because of profuse sweating on the left side of the face, brought on by taking food into the mouth, mastication not being necessary. Sweating had been present since thirty years before, when a blow he had received over the left temporal and parietal regions had stripped the scalp and left auricle down over the face. The area of sweating was bounded by the left ear, the nose, the hair line over the temporal region and the lower edge of the mandible. The secretion was so marked that many drops of sweat would cover the affected area, which often felt numb and occasionally ached. No twitchings were noted.

The patient was a healthy-appearing man. Examination revealed aortitis of long standing. The blood Wassermann reaction was strongly positive; there were no other signs of syphilis. There was a long curved lineal scar extending from a point 12.5 cm. above the left ear to a point just below and 7.5 cm. behind the ear. The auditory canal was completely closed by scar tissue. The left brow could not be wrinkled as much as the right, nor could the left eye be closed as tightly, although there seemed to be no fixation of the soft part to the underlying bone. There evidently had been partial paralysis of the superior branches of the facial nerve. The patient was given a pickle to eat and in a few minutes a profuse secretion of sweat appeared over the left side of the face (Fig. 1).

Case 3 (A388119). A. H., a girl, aged six years, came to the Clinic April 4, 1922, because of a sinus below the left ear and profuse sweating on the left side of the face during eating. When five days old, she developed acute parotitis on the left side. The swelling had been lanced just below and back of the left ear, and a sinus had persisted ever since, with discharge of a clear, watery secretion, especially during mastication. Immediately after the lancing of the abscess, the left side of the face had become paralyzed, but had long since recovered sensation. Since lancing there had been marked flushing and hyperhidrosis of the left parietal region whenever the patient had taken food. This was especially marked when the food had an acid taste, such as pickles, sour fruit, and often it was necessary to cover the patient's shoulder with a towel to protect her clothes. The child had become very sensitive about her condition and would seldom eat if strangers were present.

General examination was negative, except for a small fistula of the parotid on the left side of the face opening just below the auricle. Stenson's duct was patent. There was faulty regeneration of the left facial nerve, as shown by the fact that, on closing the left eye, the left corner of the mouth twitched. When the child ate a pickle, marked flushing, followed by profuse sweating, covered the left parotid region (Fig. 2).

The fistula of the parotid was cauterized. On examination two months later the fistula was entirely closed, but hyperhidrosis remained the same.

PHYSIOLOGY OF SWEATING

The secretory activity of the sweat glands has been shown to be regulated by definite secretory nerve fibers which form nerve trunks in close relation to the vasomotor fibers. Dupuy, in 1816, showed that division of the cervical sympathetics in a horse produced a marked and persistent secretion of sweat in the half of the head operated on. This was accompanied by a neuroparalytic hyperemia. This experiment was confirmed by others later. Campbell, Jamieson and others have observed cases of unilateral sweating of the face, accompanied by headaches and flushing. The correlation of the phenomena of sweating and flushing is, however, not constant or necessary. Often sweating is observed in areas of marked pallor, denoting vasoconstriction. Langley has shown that all the fibers capable of evoking sweating left the spinal cord by way of the anterior roots and between the second thoracic and third lumbar segments. These fibers are distributed to the cutaneous surface by the nerves of general sensibility.

Sweat centers which control sweat secretion have been localized in the lumbar and cervical cord and medulla by various investigators, though some have not recognized the existence of such centers. Certain authors admit the existence of fibers antagonistic to the sweat gland. The existence of these fibers has never been definitely proved, but in many cases, the clinical facts could best be explained by assuming the existence of two sets of fibers controlling the secretion of sweat.

THE ETIOLOGY AND PATHOLOGY OF HYPERHIDROSIS

General hyperhidrosis is, as a rule, associated with general debility, and probably in many cases is symptomatic of some grave underlying, unrecognized disease. It is commonly observed in Graves' disease, tuberculosis, and malaria, and in various diseases of the nervous system, such as erythromelalgia, tabes dorsalis, spinal gliosis, and general paralysis of the insane. It has also been observed as a phenomenon of psychic degeneration, and is occasionally seen in neurasthenics. Anything that impairs the general body health and depresses the tone of the nervous system is apt to result in hyperhidrosis.

The literature on localized hyperhidrosis during the last twenty years is quite meager. Previous to that time several interesting and instructive papers had been published. Localized hyperhidrosis has been ascribed to many and various causes. As the condition has been confined to the face only in the cases observed at the Clinic, we will confine ourselves to the various views of the etiology in these cases. Raymond has classified the etiologic factors of hyperhidrosis in four groups as: (1) a result of disease of the central nervous system; (2) a result of disease of the cervical sympathetics; (3) a result of disease of the fifth and seventh nerves; and (4) reflex in origin from irritation of other nerves, such as those of taste, smell, and touch.

Group 1. Hyperhidrosis due to disease of the central nervous system. Raymond and others have reported several cases of hyperhidrosis of the face due to various lesions of the central nervous system, the exact diagnosis of which, however, was not made clear. Head has observed several such cases in patients with spinal cord injuries. Sweating seems to be reflexly stimulated by processes below the site of injury, such as distention of the bladder, changes of gas pressure in the bowels, or certain stimuli applied to the limbs. Hyperhidrosis in these cases occurred in various portions of the body. If the etiologic factor causing hyperhidrosis is of peripheral origin, sweating after the administration of pilocarpin occurs from two to three minutes earlier in the area affected by localized hyperhidrosis than in other parts of the body. If, however, hyperhidrosis is due to changes in the central nervous system, sweating appears in all parts of the body at the same time. This method has been used in attempting to determine whether certain neurologic findings associated with localized hyperhidrosis were due to lesions of the central or peripheral nervous systems.

Group 2. Hyperhidrosis due to disease of the cervical sympathetics. A very interesting syndrome is that in which hyperhidrosis is confined to one entire side of the head and neck and accompanied by signs of sympathetic paralysis of the same side. Hyperhidrosis in these cases is usually associated with blushing, myosis of the pupil, narrowing of the palpebral fissure, and occasional unilateral headache—all of the side affected. Occasionally, there is tenderness over the cervical sympathetic ganglion of the same side. These findings all speak for a lesion causing partial paralysis of the cervical sympathetics. Raymond reports such cases and quotes Fränkel, Nitzelnadel, Ogles, Verneuil and others who had observed the same syndrome.



Fig. 2 (Case A388119)—Area of sweating following the taking of food. Also the scar just below the left ear.

Riehl, in 1884, reported a similar syndrome, except that the patient had mydriasis instead of myosis, thus showing that hyperhidrosis may be due to irritative lesions. As a rule there has been some pathologic condition in the neck or chest to account for the sympathetic disturbance. Aneurysm, enlarged thyroid, bullet wounds, trauma due to surgery, and abscesses of the cervical region have been found in these cases. On the other hand, in some cases no demonstrable lesion was found.

Group 3. Hyperhidrosis, due to disease of the fifth and seventh nerves. Injury to the peripheral nerves, especially those of the fifth and seventh, seems to be the most common cause for hyperhidrosis localized to the face. Weir Mitchell was among the first to draw attention to the fact that localized hyperhidrosis may follow injury to the peripheral nerves. As some of his patients had hyperhidrosis and others anhidrosis, he was at a loss to account for the exact mechanism causing these phenomena, and considered it "a matter which appeared to follow no rules." Church has called attention to the fact that hyperhidrosis is occasionally seen in cases of polyneuritis, especially in those due to arsenic. Remak has made some very interesting observations on localized hyperhidrosis in cases of neuritis. He says the phenomenon is not at all uncommon, as he has observed it several times in patients with neuritis due to carbon bisulphide poisoning. Babinski has made the same observations. Erlenmyer, on the other hand, reported a case of peripheral median neuritis in a patient with diphtheria; there was total inhibition of sweat secretion over the cutaneous surfaces supplied by the median nerve, although the patient was sweating on all other parts of the body.

Localized hyperhidrosis has also been observed in association with various neuralgias. Remak and Windscheid have reported several cases associated with supra-orbital neuralgia. Débrousse-Latour and Natha both reported cases of localized hyperhidrosis of the face, occurring simultaneously with attacks of tri-facial neuralgia. Landois has shown that sweating can be induced by irritation of the infra-orbital nerve. On the other hand, Schuh has observed that after section of the frontal nerve, excessive perspiration occurs at all times over the distribution of that nerve. Many of these patients had marked blushing over the affected area, as reported by Bouveret, Campbell, Windscheid, and others. Case 3 in the present series demonstrated this association very forcefully.

The facial nerve also carries fibers controlling sweat secretion. Adamkiewicz has shown that in healthy persons faradic stimulation of the facial nerve may produce sweat secretion. Straus and Bloch, in 1880, found that in cases of facial paralysis, secretion of sweat appeared on the face only as long as the nerve was electrically irritable. Nawrocki has observed in cases of facial paralysis that with gradually returning irritability of facial fibers electrification causes sweat to appear on the previously parchment-dry portion of the face. Shultz and Nitzelnadel report cases of partial facial paralysis with hyperhidrosis associated with muscle twitching of the affected side. These cases seem to show that hypersecretion is due to irritation of the secretory fibers in the facial nerve. In support of this view Rohrig observed that plastic flaps turned from the forehead do not sweat until sensation occurs, or, in other words, until the fifth nerve functions. On the other hand, Windscheid reports three cases of hyperhidrosis in patients

with facial paralysis; in two sweating varied directly with the severity of the paralysis, and the greatest degree of hyperhidrosis appeared when there was complete facial paralysis with degeneration of muscle and no irritability. In these cases, with apparently contradictory findings, the explanation appears to be possible only on assuming the existence of both secretory and inhibitory fibers of sweat glands.

So-called parotid ephidrosis is not uncommon. It is generally confined to the parotid region and accompanied by blushing. As a rule, some preceding trauma has evidently been the etiologic factor, commonly abscess or knife wound in the parotid. As Bouveret has pointed out, Stenson's duct is occasionally obstructed in these cases. The secretion was once thought to be a transudation of the parotid secretion, as it often appears at the time of eating. It is now known to be reflexly stimulated by the food, and it is real sweat and not parotid secretion. All three of the cases at the Clinic belong to this group. Parounagian, Bouveret, and others have described similar cases.

Group 4. Hyperhidrosis of reflex origin. Probably the most interesting group of cases is that in which localized sweating is reflexly evoked by the stimulation of sensory nerves. Quite often an emotional disturbance will bring on marked secretion. Usually it is the nerves of taste and smell which carry the sensory stimuli. Brown-Séquard reported six such cases, and was himself a very good example. Whenever he took any sapid food into the mouth, a marked secretion of sweat appeared over one side of the face. In some cases, mastication of food is necessary to bring on the secretion. Raymond and others have reported such cases. Bouveret observed a case, but the sweat stopped as soon as mastication occurred. In this country, Sequeira, Parounagian, Wende and Busch, and Church have reported similar cases. All three of our cases responded to such stimuli. There are many cases, however, in which a history of preceding injury cannot be discovered as an etiologic cause and in such cases the disturbance in the secretion of sweat may be due to reflex phenomena alone.

In several cases which have been reported, there has been a familial history; this brings up the question of heredity as an influence in cases of localized hyperhidrosis of reflex type. Ollivier reported a case in which the increased sweat secretion was localized to the region supplied by the superior maxillary division of the fifth nerve. The patient had a sister who, with her three children, was similarly affected. Wende and Busch reported three cases, all of the reflex type, and all members of the family similarly affected. The first patient's mother and sister were affected with a similar type of hyperhidrosis. The second patient's paternal grandmother, father, and two sisters were also affected. The third patient's grandfather, father, brother, and son were all similarly affected. The authors brought out three points: (1) the condition was not congenital, as it had not appeared in any instance until puberty; (2) localization of sweating was identical in all members of the same family; and (3) only certain taste stimuli produced hyperhidrosis, and the same stimuli produced sweating in all members of the same family.

As may be expected from the great number of etiologic factors which appear to have a bearing in the production of localized hyperhidrosis and the fact that there are several contradictory opinions about the real mechanism, the pathology has been thoroughly studied in only a few instances. Robinson, who has examined a number of sections from the palm in cases of hypersecretion, has failed to detect any abnormality either in the size of glands or in the glandular epithelium. Sutton, in similar investigations, found only slight hypertrophy of the coiled glands. Frankie and Ebstein have both observed cases of unilateral hyperhidrosis with signs of sympathetic paralysis. At necropsy multiple varicosities of the vessels of the cervical sympathetic ganglia were found. The ganglion cells, however, were normal in size but heavily pigmented. They thought that the presence of these varicosities was a sufficient cause for chronic irritation of the ganglion cells. Raymond observed a patient with unilateral hyperhidrosis with changes in the sympathetic system. At necropsy tuberculosis of the lungs and pleura was demonstrated. The inferior cervical sympathetic ganglion of the affected side was enlarged, and microscopy revealed fibrous changes and increased vessel formation and cell proliferation. These were all signs of chronic inflammation which, no doubt, explained the cause of the hyperhidrosis and associated phenomena.

SUMMARY

Localized hyperhidrosis is due to disfunction of nerve fibers that control sweat secretion. The

causes may be divided into two groups. If the condition is reflex in origin, no history of disturbance of nerve function can be elicited. This group comprises patients who have sweating strictly localized, or covering one side of the neck and face, and evoked reflexly by the stimulation of the nerves of taste or smell. The second group is comprised of cases in which trauma or a lesion of the nervous system can be demonstrated. The site of the lesion may be either central or peripheral. If peripheral, the secretory fibers may have been affected either in the sympathetic ganglion or during their course in some of the nerve trunks. Whether the lesion is irritative or paralytic cannot be definitely determined, as patients whose clinical findings demonstrate either cause, have been reported. In view of so much apparent contradictory evidence, we do not feel warranted in drawing any conclusions as to the pathologic physiology that influences hyperhidrosis.

BIBLIOGRAPHY

1. Adamkiewicz, A.: Die Secretion des Schweisses. Berlin, 1878.
2. Adamkiewicz, A.: Zur Physiologie der Schweisssecretion. Arch. f. path. Anat., 1879, lxxv, 555-560.
3. Block, E. A.: Contribution à l'étude de la physiologie normale et pathologie normale et pathologique des sueurs. Theses. Paris, 1880. 107 pp.
4. Bouveret, L.: Des sueurs morbides. Theses. Paris, 1880, 148 pp.
5. Brown-Séquard: Production de sueur sur l'influence d'une excitation vivi des nerfs du goût. Comp. rend. Soc. de biol., 1850, i, 104.
6. Campbell, H.: Flushing and morbid blushing; their pathology and treatment. London, H. K. Lewis, 1890, 280 pp.
7. Church, A.: Diseases of the nervous system. New York, Appleton, 1910, xxi, 1205 pp.
8. Débrousse-Latour: Quoted by Raymond.
9. Ebstein, W.: Ueber einen pathologisch-anatomischen Befund am Halssympathicus bei halbseitigem Schweiss. Arch. f. path. Anat., 1875, lxii, 435-437.
10. Erlenmyer: Quoted by Remak.
11. Frankie: Quoted by Caldwell: A review of the neurosis of the pneumogastric and sympathetic nerves. Virginia Med. Monthly, 1878-1879, v, 565.
12. Head, H.: Studies in neurology. London, Hodder and Stoughton, 1920, i-ii.
13. Jamieson, W. A.: Unilateral flushing and hyperhidrosis. Brit. Jour. Dermat., 1893, v, 137-138.
14. Landois: Quoted by Raymond.
15. Langley: Quoted by Luciani, L.: Human physiology. London, Macmillan, 1915, iii, 667 pp.
16. Mitchell, S. W.: Injuries of nerves and their consequences. Philadelphia, Lippincott, 1872, 377 pp.
17. Nawrocki, F. Weitere Untersuchungen über den Einfluss des Nervensystems auf die Schweissabsonderung. Centralbl. f. d. med. Wissensch., 1878, xvi, 721-724.
18. Nitzelnadel: Quoted by Raymond.
19. Natha: Quoted by Raymond.
20. Ollivier: Quoted by Bouveret.
21. Parounagian: Gumma of the tongue; local hyperhidrosis; aneurysm. Jour. Cutan. Dis., 1913, xxxi, 515.
22. Raymond, P.: Des ephidroses de la face. Arch. de neurol., 1888, 51-75; 212-227.
23. Remak, E.: Neuritis and polyneuritis. In: Nothnagel's Specielle Pathologie und Therapie, 1899, i Hefte, x, 714 pp.
24. Riehl, G.: Hyperhidrosis unilateralis; Beitrag zur Kenntniss der Sympathicus-Erkrankungen. Wein. med. Presse, 1884, xxv, 1077; 1115.
25. Robinson, A. R.: A manual of dermatology. New York, 1885.
26. Rohrig: Quoted by Windscheid.
27. Schuh: Quoted by Remak.
28. Sequeira, J. H.: Diseases of the skin. 2 ed. Philadelphia, Blakiston's, 1915, 577 pp.
29. Shultz: Quoted by Raymond.
30. Straus, I.: Contribution à la physiologie des sueurs locales; action et antagonisme locaux des injections hypodermiques de pilocarpine et d'atropine. Comp. rend. Soc. de biol., 1880, 7. s., i, 231-233.
31. Sutton, R. L.: The histopathology of hyperhidrosis circumscripta. Jour. Cutan. Dis., 1917, xxxv, 154-156.
32. Wende, G. W., and Busch, F. C.: Localized facial sweating, following certain olfactory stimuli. Jour. Am. Med. Assn., 1909, liii, 207-208.
33. Windscheid, F.: Ueber den Zusammenhang der Hyperhidrosis unilateralis faciei mit pathologischen Zuständen des Facialis. München. med. Wchnschr., 1890, xxxvii, 882-885.

BRONCHIECTASIS—A REPORT OF FIFTY-ONE CASES**

S. A. WEISMAN, M.D.
Minneapolis, Minn.

This report represents a series of consecutive cases of bronchiectasis which we have studied during the last six months.* It was very interesting to note that the history of epidemic influenza was quite frequent and it appeared to us that influenza might bear a close relationship.

Osler, in the eight edition of The Principles and Practice of Medicine, published in 1916, makes the following statement: "The disease (bronchiectasis) seems to have increased in frequency since the influenza epidemics of the past fifteen years. Of six consecutive cases in my ward in the session

**From the Outpatient Department, Department of Medicine of the Medical School, University of Minnesota.

*April to October, 1921.

of 1904-05, from every one Boggs isolated the influenza bacillus."

Bronchiectasis is generally considered to be a rather uncommon condition, but we find it to be relatively frequent. Detection of early bronchiectasis is difficult and the condition is not frequently diagnosed early. It is common to look upon bronchiectasis as producing cavities only and for the patient to expectorate large quantities of sputum. However, the condition may manifest itself only by a slight diffuse dilatation of the bronchial tree of the lower lobes. This form is frequently overlooked both by the clinician and the roentgenologist. The *x*-ray picture of the advanced types is distictly more characteristic.

Etiology.—Any long standing inflammatory process of the bronchi tends to weaken the walls. The muscle fibres and elastic fibres become atrophied and separated. The result is that severe coughing, kept up for a period of time, and raising the intrabronchial pressure beyond the limits of resistance of the weakened and thinned walls, produces permanent dilatation.

The common conditions predisposing to bronchiectasis are:

1. Broncho-pneumonia, following influenza.
2. Chronic bronchitis, the result of a series of acute respiratory infections involving the bronchi as well as the upper portions of the tract. This is a common cause in our northwest climate, where there are sudden changes in weather conditions, with rapid fluctuations of temperature.
3. Chronic bronchitis or pneumonitis, following inhalation of irritant gases such as used in warfare.
4. Chronic pulmonary tuberculosis, with resultant fibrosis. The more disseminated and dense the fibrosis, the more favorable are the conditions for bronchiectasis.
5. Inhalation of dust, chiefly inorganic, causing inflammatory changes in the mucous membrane of the upper air passages and later in the mucosa of the bronchi, and leading to fibrosis. These conditions are found in stone masons, miners, potters, millers, etc.
6. Conditions causing narrowing of the lumen, such as tumors, enlarged glands, foreign bodies, aneurysms and gummas. Where secretion accumulates there will be inflammation of the bronchial wall and induration about the bronchi, leading to dilatation.

Morbid Anatomy.—Packard, in his recent article on non-tuberculosis changes in the lungs, states that all pneumonias take either of two courses: (1) absorption of the exudate and recovery; or (2) organization of the exudate going on to pulmonary fibroses, thickening and weakening of the bronchial tubes, bronchiectasis and emphysema. The first course is that followed by lobar pneumonia; the second is seen commonly in broncho-pneumonia, almost always a complication of influenza.

The changes resulting in bronchiectasis are commonly found in the lung bases and are often bilateral. There are three more common varieties: (1) infiltrative, as pointed out by Moore; (2) cylindrical or fusiform, common in tuberculosis; (3) saccular, with cyst-like cavities. In advanced cases with multiple bronchiectatic cavities the appearance of the *x*-ray plate may suggest soap-bubbles.

Symptoms.—The symptoms depend in general upon the extent and character of the pathological changes. They may be very slight or may simulate those of advanced pulmonary tuberculosis. Loss of weight may be slight or none at all.

Ash in his report on 551 necropsies from eight different hospitals on supposedly tuberculous cases found sixty-one non-tuberculous. McRae and Funks in a series of 1,200 hospital cases for advanced pulmonary tuberculosis found seventy-two that were non-tuberculous.

Three cases came to our attention who were in sanatoria from six to twelve months for advanced pulmonary tuberculosis, who on examination including *x*-ray studies and repeated sputum examinations, were found to have bronchiectasis, not complicated by tuberculosis.

The symptoms usually are not in proportion to the physical findings when contrasted with a disease like tuberculosis. The patient, as a rule, complains only of attacks of paroxysmal cough in the morning, with varying amounts of expectoration. Fever may be slight or absent. Physical examination, however, may show marked lung changes.

Expectoration.—Sputum examinations are very valuable. Any amount over 25 c.c. in twenty-four hours for any length of time, and not occurring during an acute infection, is valid ground for suspecting bronchiectasis. Fifty to 75 c.c. under the same conditions is strong evidence for bronchial dilatation. It is usually muco-purulent, and repeated examinations in the series studied did not show acid-fast organisms. The odor may be foul

or unobjectionable. Large amounts of sputum separate into three layers on standing: (1) lower, opaque and greyish containing most of the cellular elements; (2) middle, thin and turbid, containing considerable amounts of stringy mucus; and (3) top, frothy and brownish.

The advanced cases may complain of dyspnea, hemoptysis, severe chest pain due to pleural involvement, night sweats, loss of weight and fever. It is not uncommon for these patients to manifest the arthralgias, arthritides, myalgias and myositides, that one sees in other forms of focal infection.

Our series of fifty-one cases gave the following symptoms and signs or history in order of their frequency:

Symptom or Sign or History	*Number*	*Per Cent*
Cough	51	100
Expectoration	51	100
Pains in chest	39	77
History of Influenza	36	72
History of Pneumonia	6	12
History of Pleurisy	12	23
"Catch Cold" easily	21	41
Temperature	18	35
Loss of weight	17	33
Night sweats	7	14
Hemoptysis	2	4
Tuberculosis	2	4

The striking feature in this series is not only the fact that 100 per cent gave a history of cough and expectoration but that 72 per cent gave a history of influenza, and 12 per cent gave a history of pneumonia, making a total of 84 per cent giving a history of either influenza or pneumonia.

Thirty-five per cent of the cases showed a temperature varying from 99° F. to 100° F. This was probably due to the fact that they usually came to the dispensary during an acute cold superimposed on the already existing bronchiectasis. The temperature in these cases came down to normal in most every instance in a period of one to two weeks.

Sex. — Twenty were males, or 39 per cent. Thirty-one were females, or 61 per cent.

Lobes Involved.—

26 cases—50 per cent were bilateral.
15 cases—30 per cent were in left lung.
10 cases—20 per cent were in right lung.
49 cases—96 per cent were in lower lobes.
2 cases— 4 per cent were apical.

Age.—

Age	*Cases*	*Per cent*
Under 10	1 (8 yrs. old)	2
10-20	10	20
20-30	12	24
30-40	10	20
40-50	7	14
50-60	4	8
60-79 or over	6	12

The record of age in one case was missing.

Physical Signs.—The physical sign, like the symptoms, correspond more or less closely to the severity of the case.

A. Inspection: Patient is usually well nourished. There is little or no apparent loss of weight. Early cases show nothing important. Advanced cases may show the following: (1) clubbing of the fingers; (2) end of nose bulbous. One such case was in a sanatorium for one year before she was recognized as a case of bronchiectasis. Her condition apparently did not change during the year of residence; (3) there may be unilateral retraction and diminished expansion of the chest; (4) heart is frequently displaced toward the affected side.

B. Palpation: If emphysema is present the fremitus is diminished, but if fibrosis is at all extensive or if cavities are large fremitus is increased.

C. Percussion: The character of percussion note depends on the size of the cavity or cavities, together with the character and extent of the associated parenchymal condition. If infiltration or fibrosis is present the note is impaired. If emphysema is present there is a hyperresonant note.

D. Auscultation: Auscultation is probably of greatest value in the early cases. The breath sounds vary in character but more often are broncho-vesicular or somewhat harsh on inspiration over the main bronchi posterior. They may be absent or diminished in intensity. The varieties of râles heard in bronchitis are frequently heard, the sibilant râle varying from the high-pitched piping or whistling râle to the low-pitched. They may be bubbling or appear in moist showers as coarse, medium or fine râles, depending upon the parenchymal reaction surrounding the affected bronchial structures. In the advanced types these findings may be fairly constant and, although altered by cough, persist. They are most frequently heard over the lower lobes posteriorly and frequently

both through inspiration and expiration interspersed with an occasional sibilant râle. This condition existing from day to day accompanied by a fairly constant amount of muco-purulent sputum and paroxysmal coughing were the outstanding diagnostic features of the disease.

E. *X*-Ray: The *x*-ray shows nothing characteristic in the early types but the advanced stages of the cylindrical and sacculated forms are very often recognized. The infiltrative or early form is often seen as an increase in the linear densities along the bronchi from hilus to the periphery, especially over the lower lobes. If this picture accompanies the symptoms and physical signs mentioned it aids in confirming at least a chronic bronchitis.

Briefly, some differential points in distinguishing bronchiectasis from two other conditions with which it is frequently confused, pulmonary tuberculosis and abscess, may be mentioned. In pulmonary tuberculosis the sputum contains tubercle bacilli in over 70 per cent of the manifest cases, and repeated sputum examinations help. In tuberculosis the pathological changes in probably 90 per cent of the cases are in the upper lung fields and the findings more constant and uniform. The constitutional signs are more in accordance with the physical findings as a rule.

Paroxysmal cough producing considerable amounts of sputum is not present except in the advanced cases of tuberculosis, when the sputum usually is positive. Febrile reactions are common and quite characteristic. Where the sputum is repeatedly negative on microscopic examination and the *x*-ray findings doubtful, guinea pig inoculations of sputum may show an occasional case to be tuberculous. The symptomatology of pulmonary tuberculosis is quite characteristic in the majority of cases, the tuberculin test occurs with greater frequency and the physical signs and *x*-ray reveal parenchymal changes most characteristic.

Pulmonary Abscess: The patient is acutely ill. He has recently recovered from an acute illness or recent operation in the upper respiratory tract after a general anesthetic. There is a history of sudden expectoration of a large quantity of mucopurulent material. The pathological process is usually more localized. The sputum shows a high albumen content and very many elastic fibres.

Prognosis.—This depends considerably on the severity of the condition. Age is a factor. The young individual seems to respond better to treatment than the older one, where there is more tendency to fibroses.

Rarely, if ever, is there a complete restoration. However, the patient is made acquainted with his condition, for as in tuberculosis the education of the patient plays an important part.

With the means at hand today the outlook seems brighter for these cases than formerly.

Treatment.—Medical treatment cannot be expected to heal cavities of any considerable size, but measurable relief may be given.

1. Clean up all foci of infection of teeth, tonsils and sinuses, and all nasal polypi.

2. A warm, dry climate without sudden and unexpected changes is desirable. In cold climates and in winter the patient should sleep indoors, but the room should be well ventilated and warm.

3. Postural treatment, in which an attempt is made to drain the cavities, is very important and may be effective in a considerable degree. Teach the patient the various postures learned by experience to be effective in the given case.

4. Inhalation of creosote and volatile oils, such as eucalyptus and menthol, will often alleviate disagreeable symptoms but must be continued over several months.

5. Intratracheal injections of creosote, 1 to 2 per cent in olive oil, will also, in some cases, give marked relief.

6. Bronchoscopic suction with local applications as pointed out by Lynah and Yankauer requires long practice and should be handled only by the skilled bronchoscopist.

Discussion.—A patient complaining of "catching cold" easily since an attack of influenza with attacks of paroxysmal cough and abundant expectoration, especially on rising in the morning or periodically during the day, the total amount of sputum 25 c.c. or more in twenty-four hours over a considerable period of time, the loss of weight little or none, and in whom repeated sputum examinations are negative for tubercle bacilli, with the temperature normal or only slightly above, and in whom the pathological process is limited to the bases, should be strongly suspected of having bronchiectasis. *X*-ray studies should be made and other causes of cavitation should be excluded.

Conclusions.—

1. Bronchiectasis is a relatively common condition of the lungs since our pandemic of influenza in 1918 and 1919.

2. Broncho-pneumonia complicating influenza often leaves permanent lung changes which are important predisposing factors toward bronchiectasis.

3. In our northwest climate where we have sudden changes in temperature, colds are common and may lead to chronic bronchitis and bronchiectasis.

4. This condition is often mistaken for tuberculosis.

5. Treatment consists chiefly in cleaning up foci of infection, warm and dry climate, postural treatment, inhalation and intratracheal injections. Suction with the aid of a bronchoscope may prove to be a very promising method in more advanced cases.

REFERENCES

1. Osler: Principles and practice of medicine, 8th Edition.
2. Packard: Jour. A. M. A., Vol. 75, p. 1537, December 4, 1920.
3. Norris and Landis: Diseases of the chest, 2nd Edition.
4. Lynah, Henry Lowndes: Bronchoscopic studies of pulmonary abscess. Jour. A. M. A., Vol. 77, 20, November 12, 1921.
5. Yankauer, S.: Bronchiectasis and pulmonary abscess. New York Med. Journal, p. 257, February 5, 1916.
6. Garvin, Lydall & Morita: Am. Rev. Tuber., 1-16, 1917.
7. Lord, F. T.: Boston Med. & Surg. Jour., CXLVII, 662, 1902.
8. Field, G. M.: Am. Jour. Med. Sc., CLII, 1905—537, 159, 442, March, 1920.
9. Call, M.: Virginia Medical Monthly, 47, 346, November, 1920.
10. Lawson, C. B.: Virginia Medical Monthly, 47, 353, November, 1920.
11. Lyter, J. C.: Med. Cl. No. Am., Vol. 4, p. 819, November, 1920.
12. Radin, M. J.: Am. Jour. Med. Sc., 160-233, August, 1920.
13. Keller: Journal-Lancet, Vol. 40—133, March, 1920.
14. Moore, A. B.: Am. Jour. Roent. November, 1916.
15. Elliot, H. J.: Med. Rec., Vol. 98, No. 7, p. 253, August, 1920.
16. Ash, J. E. The pathology of the mistaken diagnosis in hospitals for advanced tuberculosis. Jour. A. M. A., Vol. 64, 11, January 2, 1915.
17. McCrae and Funk: The diagnosis of chronic pulmonary tuberculosis. Jour. A. M. A., Vol. 73, 161, July 19, 1919.

LOW VIRULENCE IN MILIARY TUBERCULOSIS

MORRIS I. BIERMAN, B.S., M.D.
Roentgenologist and Chief of Laboratories, U. S. Veterans' Hospital No. 35
St. Louis, Mo.

Miliary tuberculosis is a disease the very name of which brings fear into the hearts of the stoutest; it calls up visions of a young patient, lying in bed acutely ill, with flushed face, dyspnea, hyperpyrexia, coma, and in a short time death, inevitable death, the one and only prognosis we are accustomed to associate with this terrifying condition. But is this always so? On rare occasions there is reported a case of tuberculous meningitis with recovery, and the usual comments are that the diagnosis was probably incorrect. Or on an even rarer occasion a case of miliary tuberculosis is reported as having recovered, and again the same comments are made, but with what justification? It is probably true that in the average lifetime of the general practitioner there will occur no recoveries from miliary tuberculosis, and he will see no recoveries of patients of his colleagues who have this same serious condition; and if he does hear of a recovery it is put down to an erroneous diagnosis. Incorrect diagnosis, in fact, covers a multitude of therapeutic accomplishments of his associates.

As we all know (though I have heard expressions to the contrary), tuberculosis leaves an undeniable impression on an *x*-ray film. If recovery takes place, definite and conclusive evidence remains on the films showing that the tuberculous lesion has healed. There is no such thing as a normal appearing chest, radiographically speaking, if the patient has recovered from a tuberculous infection. The scars of the lesion remain, and that scar tissue, once deposited, remains until the lung decays in the grave. Therefore, if a tuberculous infection has occurred and has healed the roentgen-ray examination shows it, and in addition it will show the type of infection.

In reviewing the pathology of miliary tuberculosis we find that the rapid and widespread development of miliary tuberculosis in the lungs is often part of a generalized tuberculosis. When the lesions are most extensive in the pulmonary tissue, both lungs are apt to be involved. But, as is to be expected, the number, size and character of the miliary tubercles differ in different cases.

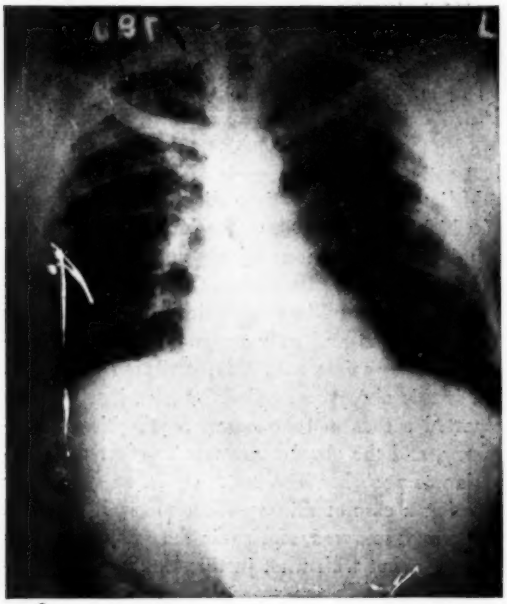


Fig. 1—Miliary Tuberculosis, no signs or symptoms.

The distribution of the lesions is such that the tubercles are found in the parenchyma of the lungs, in the connective tissue forming the septa, in the walls of the bronchi and blood vessels, and in the visceral pleura. They may be scattered singly through the lungs or aggregated in groups; they may be separated by considerable interspaces or be so close together that the lung is rendered nearly solid. While some are so small and transparent that they can hardly be seen with the naked eye, others are larger and more opaque and may have a lighter center marking the area of necrosis. On investigation into the mode of infection it becomes evident that the lungs are infected through the blood vessels or lymphatics, as it is frequently found that the generalized tuberculous infection is secondary to a localized tuberculous lesion either in the lungs or in some other part of the body. As is probably the case in the instances later to be cited, in a considerable proportion of miliary tuberculous infections of the lungs, tuberculous lesions of the bronchial lymph nodes or of the lung tissue itself of greater duration are probably sources of origin of the widely disseminated tuberculous colonies. Not infrequently the tubercles in one section of the lungs are larger and apparently older than those in other sections. It is thus seen that tubercles in the upper portions of the lungs may be more abundant, larger, and more fibrous than in the lower lobes. What is probably true is that in many cases of acute miliary tuberculosis of the lungs whether or not associated with older local tuberculous lesions from which the distribution of the bacilli may have taken place, the generalization has not occurred at once, but by successive fresh infections.

The minute pathology of the lesions is well set forth by Delafield and Prudden, who state that:

"Miliary tubercles in the lungs are in structure essentially similar to those formed elsewhere in the body, except that the filling of the air spaces with exudate makes the lesion somewhat more complicated. The tubercles may be composed of small spheroidal cells or of larger polyhedral cells with more or less fibrous stroma. Giant cells may be present; coagulation necrosis is usual. Such forms of miliary tubercles may be, and commonly are, associated with the presence of an exudate in the adjacent or involved air vesicles. This exudate may be largely made up of exfoliated epithelial cells which have proliferated, or with these there may be serum, leucocytes, and fibrin. The blood vessels within the tubercles which replace the lung tissue are partially or wholly obliterated.

"But the miliary foci of tuberculous inflammation in the lungs may consist wholly of the inflammatory exudate which early becomes necrotic, often with necrosis of the walls of the involved air spaces. Such tubercles, of the exudative type, are apt to occur in children, and usually contain large numbers of tubercle bacilli."

In marked contrast, on the other hand, to the

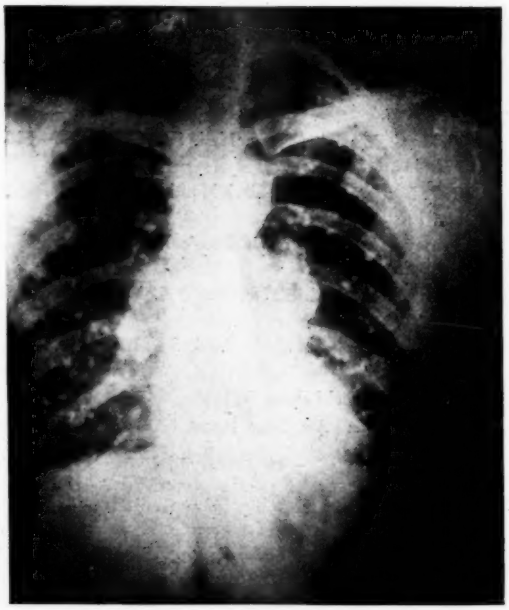


Fig. 2—Miliary Tuberculosis, no signs or symptoms.

exudative type which is so apt to occur in children and which gives such a serious and fulminating lesion terminating shortly in death, the widely disseminated tuberculous lesions in the lungs may, with or without extensive necrosis, become surrounded by, or converted into, masses of dense fibrous tissue, and these fibrous tissue masses may contain necrotic material, or they may even be calcified at the center. While the calcified masses may not contain bacilli, not infrequently the organisms remain alive within them for a long time, quiescent, but still virulent. When these foci of tuberculous inflammation become sharply outlined and discrete, and probably fibrosed or calcified, they are generally referred to as healed tubercles and the process is sometimes spoken of as chronic miliary tuberculosis. The fibrous tissue which forms in and about the miliary tubercles, as well as other tuberculous lesions, is the result of a distinctly reparative process in which the already formed tuberculous tissue or its products apparently act in a manner similar to foreign bodies in inducing fibrous tissue growth.

The following histories serve to illustrate the types of cases in which the mild form of miliary tuberculosis occurs:

Case 1. Figure 1. C. L., male, white, 28.

Family History.—Father has lung trouble; mother sickly, three operations in last 8 months.

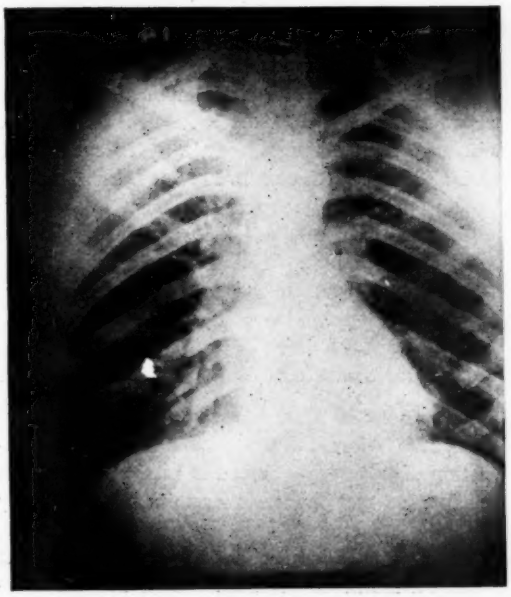


Fig. 3—Miliary Tuberculosis, no signs or symptoms.

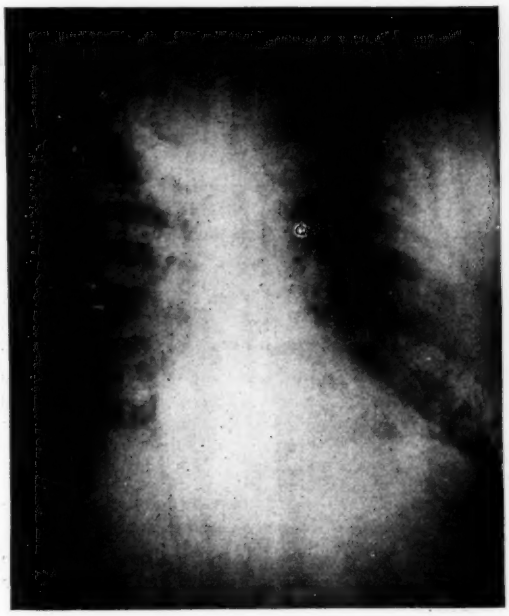


Fig. 4—Miliary Tuberculosis, no signs or symptoms.

Chief Complaint.—Back and lungs hurt all the time; burning urination; headaches back of head and pain in muscles of neck; walking makes him weak in legs.

Previous History.—Usual diseases of childhood; "dropsy" at age of 2 years; pneumonia 8 years ago; legs injured by being run over by wagon at age of 19; genito-urinary negative.

Present History.—Fell while drilling in hot sun; in hospital 10 days and was discharged a short time later on account of spinal trouble; has worked ever since.

Physical Examination.—Patient is well nourished and well developed; chest negative; glands negative; teeth negative; blood pressure, systolic 145, diastolic 95. Neurological consultation shows patient to be suffering from a condition which was thought to be due to some intoxication.

Case 2. Figure 2. C. W., male, white, 38.

Family History.—Father living and well; mother died during childbirth; one brother living and well. No history of tuberculosis, cancer or insanity.

Chief Complaint.—Swelling of arm; smothering feeling in chest; shortness of breath. Has been short of breath ever since he was gassed. Discharged May 8, 1919. Two weeks later began to have pain in arm. Blood vessels became hard and very prominent. One month ago arm began to swell from fingers to shoulder.

Previous History.—Usual diseases of childhood. Gassed September 27, 1918. Neisserian infection 15 years ago.

Physical Examination.—Blood pressure, systolic 136, diastolic 80; pulse 80. Well nourished. Head negative except

pyorrhea and dental caries. Chest broad and well formed. Findings negative. Abdomen negative. Genito-urinary negative. Extremities, slight clubbing of fingers. Entire left arm somewhat larger than right. Left hand slightly cyanotic. Superficial veins prominent and sclerosed. Glands of left axilla moderately enlarged. Wassermann negative. Urine negative.

Diagnosis.—Sclerosis of vessels of left arm; tuberculous lymph nodes of chest; lymphadenitis left axillary glands; no active chest pathology present.

CASE 3. Figure 3. J. J., male, white, 28.

Family History.—Father dead, 26, blood poisoning; mother living and well; one sister and one brother living and well. No history of tuberculosis, cancer or insanity.

Chief Complaint.—Aching in chest and between shoulders in back; hacking cough; has had night sweats; clearing and swallowing in throat; gas on stomach; unable to belch; pains in stomach after meals; insomnia; nervousness; poor appetite.

Previous History.—Mumps, measles, chickenpox, whooping cough during childhood. Venereal negative.

Physical Examination.—Negative in all respects with the exception of dental caries. Six sputa and one urine were negative.

Diagnosis.—No active pulmonary condition found.

CASE 4. Figure 4. T. C. B., male, white, 42.

Family History.—Father killed in accident; mother died at 50 years, cause unknown; one brother and one sister living and well.

Chief Complaint.—Shortness of breath; headache; cough; pain in region of heart.

Previous History.—Measles; mumps; whooping cough; chickenpox during childhood. Genito-urinary negative.

Present Illness.—In September, 1918, was sick in hospital for about 10 days. Some time later again sick for four or five days; had pneumonia or pleurisy; tonsils and adenoids removed. Since discharge July, 1919, has not been able to follow previous occupation of farmer; can do light work.

Physical Examination.—Negative throughout with exception of double mitral murmurs with slight transmission to axillary line.

Final Diagnosis.—Mitral insufficiency.

A careful perusal of these histories shows that none of these patients had any illness at all commensurate with the widespread pathology found in their chests on roentgen ray examination. It is true that Case 4 had a slight illness of a few days duration but nothing at all to compare with the illness we are accustomed to associate with acute miliary tuberculosis. The illness could have been only one of the mild infections of unknown origin which are so common (influenza, la grippe), and in fact clinically were nothing but that. Let us assume that the infection and illness were due to the dissemination of the tuberculous masses throughout the pulmonary tissue, as we can find no other historical data to account for the widespread lesions.

Due to some unknown cause, a tuberculous focus in the body, probably in the mediastinum, ruptured and the tubercle bacilli were disseminated throughout the pulmonary tissue. The immunity of the patient to tuberculosis being excellent, although the infection was severe, he became ill, was confined to bed for a few days, and showed all the symptoms and clinical signs of a mild respiratory infection, and in a few more days clinically recovered, and has had no trouble since. The resistance of the patient was so great that even such a widespread reinfection was not sufficient to break down his immunity and the exact nature of the condition was not diagnosed. In Cases 1, 2 and 3, there is no definite history of such an illness. There is no definite time at which an illness of longer or shorter duration can be placed. In fact, there seems to be an absence of practically any kind of an illness except the illnesses of childhood. It means but one thing, that the resistance of the patients was so great that an infection which would be overwhelming in another patient did not affect them in the least. The disseminations of the lesions were not recognized either subjectively or objectively. The disease was one that was below the level of clinical manifestation throughout its course. This does not mean that there may not have been symptoms comparable to prodromal symptoms of other diseases, but it does mean that the patients were never sufficiently ill to necessitate their confinement to bed or cessation from work. The lesions probably could not have been diagnosed clinically or even roentgenologically. It is certain the few râles that probably were present were not sufficient to diagnose miliary tuberculosis, and the groups of tubercles were not sufficiently fibrosed or calcified to show on the *x*-ray films. It is presumed that there were no areas of pneumonic consolidation surrounding the groups of tubercles, which probably would account for the lack of clinical manifestations.

In a review of 3,500 roentgen ray chest examinations, it was found that a greater or lesser dissemination of tubercles occurred in somewhat less than one per cent of the cases examined. Arbitrarily fixing twenty-five calcified tubercles as a minimum, tuberculous calcified foci were found in thirty-four cases, an incidence of about one in 106 cases examined, or approximately 0.96 per cent. The num-

ber of healed tubercles ranged from about twenty-five to several hundred, and on stereoscopic examination they were found to be scattered all through the lungs, from the extreme apices to the extreme bases, as well as on the pleura. It must be remembered that, in fixing twenty-five calcified tubercles as an arbitrary minimum for the diagnosis of healed miliary tuberculosis, a still greater number of cases are excluded which contained five or ten or more of such calcifications. In the strict sense these are just as truly cases of healed miliary tuberculosis as the more widespread lesions, but it was assumed that unless a sufficient number of lesions was present which we might suppose ought to give clinical symptoms, this review of these examinations would not clearly bring out the point under consideration, which we all know, but which has not been clearly crystallized in most minds, and that is that miliary tuberculosis is not necessarily a serious disease; that it occurs much more frequently than we generally assume it to be present; and that it may be absolutely below the level of clinical, or even subjective, manifestation.

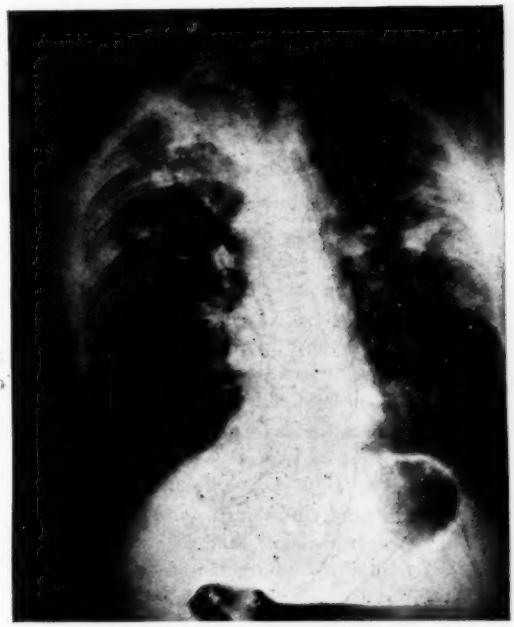


Fig. 5—Miliary Tuberculosis, healed and reactivated.

It has been shown that the patients to whom an infectious accident occurs, following which there is a widespread dissemination of tuberculous colonies throughout both lungs, have a remarkable resistance to the toxins produced by the bacteria, and, without difficulty, in a short time calcify the tubercles and heal the lesions. As we know, there are times when a patient who normally has good resistance to infection may, through stress and strain of some unusual hardship, temporarily lose his comparative immunity to the disease and fall a victim to its ravages. In this the tuberculous patient is no exception.

Case 5. Figure 5. J. J., male, white, 29.

Family History.—Two brothers, ages 36 and 40, dead, tuberculosis.

Previous History.—Measles during childhood. Fracture of thigh in 1920. Neisserian infection in 1916.

Present Illness.—In December, 1917, was unable to do active duty on account of pains in chest, dyspnea and swelling of extremities. Discharged S. C. D. in January, 1918, cause not known to claimant. Since discharge has had to quit work frequently on account of loss of strength. Has had several small hemorrhages since.

This patient, as the patients of the first group, also met with an accident which disseminated the tuberculous foci throughout his lungs, and overcame them. As a matter of fact, the lesions were not entirely healed; there remained a few scattered areas where calcification was not complete and the activity of the tubercle bacilli was not entirely inhibited. Under the duress and physical strain unusual for the patient, the latent foci of infection were reactivated, and the tuberculous lesion spread, not by redissemination but by contiguity, and the usual lesions of chronic pulmonary tuberculosis are seen in association with the lesions of a widespread, partially healed, miliary tuberculosis. Had this patient not been put under the unusual strain to which he was subjected, in all probability resistance to the first (the miliary) infection would not have been lessened and he would have recovered in the same manner as the patients of the first group. Once his resistance was definitely broken down, he succumbed just as readily to pulmonary tuberculosis as his equally unfortunate brothers who never developed the high resistance that this patient had initially. He seems to be going on the same downward path which is all too familiar to the practitioner of medicine who so vainly strives to arrest the disease. It may be that the condition will, in time, be arrested, possibly more easily than would have been the case had he not had the initial high resistance, but it is only by following the case through for many months, or even years, that this can be ascertained.

To summarize the facts set forth, it was seen that miliary tuberculosis is frequently a mild infection which may be below the level of clinical manifestation. It may even be that the patient does not know that he has any unusual conditions affecting his lungs. This lack of clinical phenomena is probably due to the high resistance of the patient, or even possibly the low virulence of the infecting organism, although the former is probably the case. The condition can probably not be diagnosed clinically except as an acute bronchitis. With the aid of the *x*-ray it is possible that the condition may be diagnosed; but even this is doubtful, as the tubercles would have to be recognized by the pneumonic exudate surrounding each one. If these areas of pneumonic consolidation were at all numerous, the absorption of toxins from them would in all probability lead to clinical manifestations of greater severity than merely those of a mild respiratory infection; so it is probable that no great amount of local reaction is present and therefore not roentgenographically diagnostic. It was found that these widespread infections occurred once in every 106 chest examinations made. The percentage will probably be higher in a private laboratory, as in this service chest examinations are made on the slightest complaint, and even for no complaint at all; and certainly the percentage of normal chests is much greater than in the private laboratory. Patients showing an initial high resistance to tuberculosis may, under physical strain, break down and the usual form of pulmonary tuberculosis ensue.

Another point of interest, and one not unexpected, is that none of the patients who showed the dissemination of the tuberculous colonies were colored, although their incidence was about 20 per cent. In them probably a widespread dissemination of tuberculous foci would result only in acute miliary tuberculosis with rapid exitus.

STRANGULATED HERNIA, WITH A REPORT OF CASES*

PAUL H. KELLY, M.D.
St. Paul, Minn.

The examination of 500,000 men for employment in the industries showed that 2 per cent had hernia.[4] About 92 per cent of all hernias are of the oblique inguinal type (Prof. Paul Berger). Recurrence in hernias operated upon is less than 5 per cent.[18] Strangulated hernia makes up less than 1 per cent of all hernias operated upon. Inguinals are the most frequent, then ventral, umbilical and femoral.

Strangulated hernia when first seen usually has been severely handled by the patient, and whatever further manipulation is done should be with a view to establishing the diagnosis. Reduction by taxis is sometimes attempted even by manipulation under an anesthetic, often with appalling results; for the condition may have progressed so far before recognition that an acute suppurative process within the strangulation may, after reduction, result in the development of a general peritonitis, and surgical intervention be too late to prevent a fatality. Ochsner states that "taxis requires a gentleness and skill that can be acquired only by practice." As the average physician has not the opportunity for this practice, it is but natural that we should condemn this method of treatment.

Once the diagnosis of strangulation is made, surgical intervention is imperative, and any further effort at reduction is not only brutal but dangerous, as illustrated by Kornder's reports mentioned below, and one case which I shall report further on.

When surgical relief is finally consented to in these cases, much valuable time has elapsed and the time for examination and observation is limited. But enough time should be taken to make urine and blood analyses, because of the assistance given by these findings in determining the type of anesthetic best suited for the case, and the possibility of the presence of some acute, suppurative process, either within the strangulation or intra-abdominally situated. This is illustrated by the report by Kornder[5] of five cases of strangulated hernia complicated by acute appendicitis; also by one case in this series complicated by acute suppurative appendicitis, and two cases which showed the presence of diabetes.

The question of anesthesia is an important one, and there are several factors to be considered before a definite decision is made. Most hernias becoming strangulated have been of long duration and usually are the irreducible type. They invariably have received a considerable amount of trauma before surgical intervention has been con-

*Presented before the Ramsey County Medical Society, St. Paul, December, 1921.

sented to; often marked histological changes have taken place in the tissues, with edema separating the sac from the surrounding tissues and adhesions within the sac requiring quite an amount of dissection. These cases are much better suited for general anesthesia, because operative time is shortened and the chances for reaction and shock are thereby minimized; also the danger of infection is greatly reduced, as these cases, when operated under local anesthesia, require an extensive infiltration of the tissues where large omental adhesions are present, with greater chance for infection of the peritoneum. And if this is not done, the freeing of these adhesions is found quite difficult and even painful under local anesthesia. Those hernias which do not show evidence of a truss having been worn, or are not over large, are more suited for local anesthesia, and local anesthesia is the anesthesia of choice with most of the experienced operators. Statistics show that the mortality rate has been greatly reduced, especially in cases of advanced age, in this type of intestinal obstruction operated under local anesthesia.

The inguinal type, because of its peculiar innervation, is especially suited for local anesthesia; and usually complete anesthesia is produced after the first deep intramuscular injection. This is because of the ease of exposure of the deep structures in the field of operation and the small amount of tension or pulling required on the peritoneum and mesentery after the sac is opened.

A brief description of technic is as follows: The point of the needle is introduced under the skin, two fingers' breadth below the anterior superior spine and about one inch mesially; the skin and subcutaneous tissues are infiltrated obliquely downward and inward for the length of the needle in the line of the hernial incision, 0.7 per cent novocain without adrenalin being used. Then the needle is withdrawn to the original point of entrance, and is directed downward and inward at an acute angle, feeling for the resistance of the external oblique muscle; when this point is reached 10 c.c. of the solution are injected. The needle is then withdrawn and injection made at the lower end of the skin wheal, carrying the solution under the skin to the point selected below the lowest point of the site of the incision. The incision is then made through the skin and fascia, and the external oblique is opened parallel to its fibers above the internal ring; the flap turned back usually exposes the ilio-inguinal nerve lying on the internal oblique about 0.5 cm. from its outer border. The nerve is injected with a small quantity of the novocain, and the lower end of the external oblique is opened through the external ring. Next a crescentic injection is made just above the internal ring starting from the outer side, and this generally anesthetizes the ilio-hypogastric nerve which is in this region, and usually completely anesthetizes the field of operation so that when the sac is dissected from above and opened there is no discomfort. After the strangulation is relieved and the sac is to be ligated, the circle is completed by injecting the lower and inner side of the sac, which is then ligated and removed, and the operation completed.

Femoral hernias are usually small, and easily relieved and repaired by the use of local anesthesia. The method followed in this type of case is one of infiltration, as the nerve supply in this region is not so definitely located and small nerve branches are numerous. The simple technic is as follows: Injection of the anesthetic is started above the hernia and infiltrated under the skin in a straight line parallel to the long axis of the limb, over the prominence of the hernia to its lower margin; then the skin and fascia are opened and lateral infiltrations are made around the body and neck of the sac, which is then opened and the bowel pulled down and inspected. Next the peritoneal side of the sac is injected close up to its constriction, then is freed from the surrounding tissues by blunt dissection, ligated and reduced. Often it is necessary to stretch or nick Gimbernat's ligament before reduction can be completed. After this is accomplished the sac is ligated and the hernia repaired.

In intestinal obstruction occurring within the abdominal cavity the tendency is toward resection more often than in strangulated hernia, as illustrated by Field, Hoguet, Barnett and Kornder in their reports on strangulated hernia, and a review of the literature on intestinal obstruction. The mortality rate in intestinal obstruction has not materially changed in the last fifteen years, but there has been a marked improvement in the mortality rate of strangulated hernia. Keen gives the mortality rate of strangulated hernia operated in the first twelve hours of strangulation as about 3 to 5 per cent, and Ochsner's Surgery gives the mortality rate of acute ileus as 40 to 50 per cent.

This decrease of mortality in cases of strangulation is not only traceable to earlier intervention, improved technic and local anesthesia, but I believe is also due to resistance both local and general, which is developed against the toxic substances which are found in the obstructed bowel, and which so often result fatally in these cases resected.

The majority of cases of hernia which become strangulated usually have been irreducible, and the history of these cases shows frequent trouble with difficult reduction or relief from pain in these regions, with constipation over a long period before the final strangulation is produced. And it seems but logical to assume that these cases suffered from strangulations which were of shorter duration and eventually released themselves. But during this time toxic bodies were produced within the intestinal tract, and undoubtedly trauma was caused to the mucosa of the intestine strangulated; therefore these toxic substances could be absorbed by the traumatized intestine in sublethal doses, and would produce a reaction with the formation of local and general resistance.

Whipple[16] has isolated the toxic substance occurring in these cases which he reports as a primary proteose, and further states that this proteose intoxication may be associated with a rise in the incoagulable nitrogen of the blood to four and even ten times normal, and suggests a possible value in the diagnosis and prognosis in intestinal obstruction.

Brooks, Schumacker and Wattenberg[15] state that an isolated occluded loop of bowel will contain a large quantity of very toxic material which is not absorbed by the normal intestinal mucosa. The belief that the acute symptoms of intoxication may follow the relief of intestinal obstruction after the toxic fluid has passed into the normal bowel distal to the obstruction, is disproved by many experiments; and they further state that the patient may grow rapidly worse after the release of the obstruction, but the reason for this is that the patient has already absorbed a lethal dose of the toxic substance and the operation is merely an incident in hastening the fatal onset. Also, where resection has been done the mucosa has been damaged, giving an avenue for a much more rapid absorption of the toxic substance.

Brooks[15] states there are two important factors in the production of symptoms in intestinal obstruction: (1) the production of toxins, and (2) absorption of toxins; and as absorption of these toxins produces the symptoms, the prevention of this absorption naturally will prevent or relieve the symptoms. As the normal mucous membrane will not absorb the toxins, any surgical procedure such as resection or drainage with its denuding of mucous membrane, will give a route of entrance for the toxins. But even though the most meticulous care is exercised in making a resection, there still remains a larger area of denuded mucous membrane for absorption than would be caused by drainage. The selection of drainage in preference to resection is obvious, because the area of absorption is smaller, trauma is less, and a more rapid and direct route for the elimination of the toxins is established; also the operative time is shortened. Therefore, I believe the two-step operation is definitely indicated when resection is necessary.

The following is a report of cases operated under local and general anesthesia.

CASE 1. Baby Arthur K., 13 months old. Strangulated right inguinal hernia; duration 48 hours. Tense abdomen; pain; fecal vomiting. Immediate operation January 16, 1919, ether anesthesia. Exposed a strangulation of the ileum and lower end of cecum and appendix. Evacuation of 200 c.c. of blood around the strangulation. Appendix was acutely suppurative and gangrenous over the tip, and was removed. The rest of the large bowel and ileum was edematous and very dark; this was packed in hot towels, color improved; sac resected; hernia repaired. Discharged cured 14 days after operation.

CASE 2. Mr. M. P., 29 years old. Strangulated right inguinal hernia, 48 hours' duration. Abdominal pain, distention, fecal vomiting. Immediate operation March 25, 1919, ether anesthesia. Two feet of strangulated bowel and omentum exposed; edematous and very blue, and in spots black. Two hundred c.c. of sero-sanguineous fluid evacuated around the bowel. Color returned after application of hot saline towels. Bowel reduced; sac resected; hernia repaired. Patient discharged cured 16 days after operation.

CASE 3. Mr. A. McL., 65 years old. Strangulated right inguinal hernia, 24 hours' duration. Constant and excruciating abdominal pain referred to right inguinal region. Persistent vomiting of a fecal nature. Operated April 7, 1919, ether anesthesia. Twelve inches of blackened and strangulated bowel exposed. Evacuation of 400 c.c. of blood and blackened clots. Strangulation relieved by incision from above constriction. Hernia repaired. Patient discharged well 14 days after operation.

CASE 4. Mr. F. K., 41 years old. Strangulated right femoral hernia, duration ten hours. Pain and tenseness over hernia; vomiting. Operated December 2, 1919, ether anesthesia. Strangulation of six inches of small bowel;

good condition. Returned to abdominal cavity. Hernia repaired. Patient discharged well 14 days after operation.

CASE 5. Mr. A. N., 49 years old. Strangulated left inguinal hernia, duration 24 hours. Severe abdominal pain directed to the left inguinal region; continuous. Vomiting of a fecal nature; marked distention and acutely sensitive especially over the lower left quadrant. Diagnosis of strangulated pro-peritoneal hernia. Operated September 15, 1920, ether anesthesia. Left mid-rectus incision made. On opening peritoneum evacuated about 2,000 c.c. of a sanguineous fluid. Examination showed a long, tense band of small intestine extending down to the left internal ring, where it was strangulated, and the remainder of the small intestine was wrapped tightly around this. Strangulation was at a point two and one-half feet from the cecum and was easily released, and the mass of intestines brought out of the wound, hot towels being packed around them. About 15 feet of small bowel was uniformly edematous and blue and in spots very dark, but the surface was still smooth and shiny. Some improvement in color was noted after warm saline packs were placed about them. Abdomen was mopped dry. Intestines returned, and closure with drainage. Fourteen days after operation, left inguinal hernia was repaired under local anesthesia. Convalescence uneventful. Discharged well 28 days after beginning strangulation. Diagnosis of strangulated left inguinal hernia and volvulus of two-thirds of small intestines.

CASE 6. Mr. S. LaB., 29 years old. Strangulated left inguinal hernia, duration 30 hours. Abdominal distention, vomiting. Operated September 18, 1920, ether anesthesia. Strangulation found at the external ring. Tissues all edematous, and about 200 c.c. of a sanguineous fluid around small intestine and omental strangulation. The omental strangulation ligated and removed, and hot saline packs placed around the edematous and darkened bowel. Some improvement in color. Bowel reduced and hernia repaired. Patient discharged well 14 days after operation.

CASE 7. Mrs. D. W., 48 years old. Strangulated umbilical hernia, with marked obesity. Duration 29 hours. Griping pain extending across the upper abdomen; acute distention; difficult respiration and fecal vomiting. Operated October 9, 1920, ether anesthesia. Old omental adhesions found about hernial sac, and two feet of small bowel strangulated, edematous, cyanotic and injected. Strangulation relieved by lateral incision in the neck of the sac. Bowel and omentum returned to abdominal cavity and hernia repaired. Convalescence uneventful. Discharged well 20 days after operation. The interesting feature of this case was the great obesity in the patient; the long thickened sac was sutured transversely on its peritoneal surface, and then double imbrication of the remainder of the sac was performed with suturing over of the rectus muscles in their sheaths, these muscles appearing like two long bands of fascia.

CASE 8. Mr. N. B., 63 years old. Strangulated right inguinal hernia. Twelve hours' duration. Abdominal tenderness, distention and pain in lower right quadrant; acute tenderness over the right hernial region. Operated October 12, 1920, ether anesthesia. Strangulation of small part of the ileum. Bowel was congested and cyanotic. Returned to abdominal cavity. Hernia repaired. Discharged well 33 days after operation.

CASE 9. Mr. John D., 67 years old. Strangulated right inguinal hernia, duration 12 hours. Pain in the right inguinal region; distention and prostration. Operated November 5, 1920, local anesthesia. Small loop of ileum strangulated but in good condition. Returned to abdominal cavity. Operation completed. Patient developed pneumonia two days after operation. Discharged well 21 days after operation.

CASE 10. Mr. F. G., 56 years old. Strangulated left inguinal hernia, duration 24 hours. Vomiting, acute distention; severe acute and continuous abdominal pain. Operated October 30, 1921, ether anesthesia. Evacuated about 700 c.c. of bloody fluid and clots about bowel. Two feet of small bowel strangulated, quite blue and darkened in spots. Packed in hot towels, after which returned to abdominal cavity. Hernia repaired. Discharged well 14 days after operation.

CASE 11. Mr. W. R., 64 years old. Bilateral femoral hernia, with left strangulated, duration ten hours. Acute abdominal pain on left side and distention and tenderness over the femoral hernia. Operated November 15, 1921, ether anesthesia. Exposed a strangulation of six inches of small bowel, quite red and edematous, good condition; also adherent omental strangulation which was grayish blue. This removed and hernia repaired; also repaired right hernia. Discharged well 21 days after operation.

Where the viability of the bowel is in doubt, or gangrene has started, it is imperative to resect. With the one-step operation the mortality rate is bound to be high, and it seems but logical that when this necessity arises the mortality rate will be greatly diminished if the two-step operation is performed, and the bowel drained at the site of the strangulation. The second step in the operation should not be done until such time as all local sepsis has completely disappeared and the general systemic toxemia has subsided. Then an end-to-end or side-to-side anastomosis can be made and cure of the case effected.

While the consensus of opinion is that the site of operation should be over the strangulated area, I believe small properitoneal hernias should be exposed by opening the general peritoneal cavity through a rectus incision, as the strangulation is usually so small that when the sac is opened it is often released and slips back in the general peritoneal cavity. Then it is not only difficult but often impossible to bring out the strangulated bowel again through this opening to ascertain its viability. This was definitely shown in Case 5, given above, where over two-thirds of the small

bowel was very edematous, cyanotic and blackened in spots due to a volvulus around a smaller loop of the bowel which showed but a two-inch strangulation at the internal ring.

In the post-operative care of these cases, no one procedure has done so much in aiding recovery and reducing the toxic state as the use of tap water given subpectorally. The advantage of this procedure is: (1) the known definite amount of fluid which is put into the body and absorbed; (2) the more rapid absorption which is taking place; (3) elimination by the kidneys of toxins absorbed from the bowel; and (4) the increased fluid output in the upper bowel with a dilution of the toxins in the lumen, and a greater lavage to the area of bowel that was obstructed.

Gastric lavage was not done in any of the cases reported above, following operation, but liberal quantities of warm water were given by mouth, which was promptly vomited and cleansed the stomach in this way.

CONCLUSION

1. Strangulated hernia makes up less than 1 per cent of all hernias operated upon.

2. Reduction by taxis should not be attempted unless one has had special training in this procedure.

3. Choice of anesthesia should be governed by the physical and laboratory findings.

4. The two-step operation is indicated where resection is necessary.

5. Resistance to the toxins is greater in cases of strangulated hernia than in those of acute ileus, possibly due to an acquired local and general resistance from frequent strangulations of short duration.

6. Toxins are produced in occluded loops of bowel, but are not absorbed by the normal mucous membrane.

7. The mortality of strangulated hernia has been greatly reduced due to earlier surgical intervention, improved technic, local anesthesia, resistance acquired by the individual, and the forcing of fluids by subpectoral and bowel infusions.

NOTE.—Since the writing of this paper I have operated four strangulated inguinal hernias under local anesthesia in patients over 76 years of age. In one case, the man being over 88 years of age, the two-step operation was done, and the fistula formed by this operation closed without any further surgical procedure. All cases recovered.

BIBLIOGRAPHY

1. Field, M. T.: Strangulated hernia in the aged. Boston Med. and Surg. Jour., Apr. 21, 1921, clxxxiv, 404.
2. Murphy, F. T., and Vincent, B.: An experimental study of the causes of death in acute intestinal obstruction. Boston Med. and Surg. Jour., 1911, clxv, 684.
3. Risley, E. H.: Strangulated and irreducible hernia. An. of Surg., July, 1919, lxx.
4. Colcord, A. W.: Hernia; should it be classed as a compensable injury or a disease? Penn. Med. Jour., August, 1918, xxi, 672.
5. Kornder, L. H.: Five cases of strangulated hernia, complicated by acute appendicitis. Jour. Ia. State Med. Soc., July 15, 1919, ix.
6. Barnett, J. E. S.: An unusual case of strangulated hernia. Brit. Med Jour., Sept. 29, 1917.
7. Renton, H. F.: A case of strangulated inguinal hernia with external rupture of the sac. London Lancet, September, 1918, ii, 358.
8. Lauffer, C. A.: Hernia in industry. Jour. Ind. Hyg., 1919, i, 177.
9. Bloodgood, J. C.: The transplantation of the rectus muscle or its sheath for the cure of inguinal hernia when the conjoined tendon is obliterated. The transplantation of the sartorius muscle for the cure of recurrent hernia when Poupart's ligament has been destroyed. An. of Surg., July, 1919.
10. Smith, G. G.: Rationale of forcing fluids. Boston Med. and Surg. Jour., April 21, 1921, clxxiv, 401.
11. Whipple, G. H., Stone, H. B., and Bernheim, B. M.: Intestinal obstruction—A study of toxic substances produced in closed duodenal loops. Jour. Exp. Med., 1913, 1914.
12. Cushing, A. R.: The secretion of the urine. Longmans, Green & Co., 1917.
13. Fischer, M.: Nephritis. John Wiley & Sons, 1912.
14. Murphy, F. T., and Brooks, B.: Intestinal obstruction —An experimental study of the causes of symptoms and death. Arch. Int. Med., 1915, xv, 392.
15. Brooks, B.: Intestinal obstruction—An experimental study. Am. of Surg., February, 1918, lxvii.
16. Whipple, G. H.: Intestinal obstruction—A proteose intoxication. Jour. Am. Med. Assn., 1915, lxv. 476.
17. Dragstedt. L. R., Moorehead, J. J., and Burcky, F. W.: Intestinal obstruction—An experimental study of the intoxication in closed intestinal loops. Jour. Exp. Med., 1917, xxv, 421.
18. Ochsner, A. J.: Surgical Diagnosis and Treatment. Lea & Febiger, 1921.

THE PART OF THE PRACTICING PHYSICIAN IN PUBLIC HEALTH WORK*

H. S. DIEHL, M.D., M.A.
Minneapolis

To many practicing physicians, and particularly to the specialists of today, a subject such as this must seem quite devoid of significance, almost fantastical. And yet it is a subject on which the medical profession, especially its younger generation, can with profit spend some serious thought. Like our forefathers, we have been taught to regard the physician as the most altruistic and public spirited of men and his vocation as most deserving of a leading place among those learned professions which men follow "from higher motives than mere gain." We have felt what Robert Louis Stevenson expressed: "The physician is the flower (such as it is) of our civilization; and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race." Having, throughout the ages, been truly honored and respected of all men, is it not well to occasionally hesitate long enough to take our bearings and calculate our position in relation to the educational, political, economic and social progress of the time.

The past few decades, and particularly the past few years, have brought forth many unbelievable changes in society and in industry. The slaves have been liberated; labor unions have been formed and are now recognized as being compatible with democracy; women have been granted equal suffrage rights with men; nation-wide prohibition has come and come to stay; imperialism, as typified by Prussianism, is now merely a fact of history; bolshevism has for almost four years held sway in the largest country in the world; state education has become axiomatic; employees share in the profits of some of our largest industries; "National Health Insurance" has become a law and pronounced desirable in England; and "Workman's Compensation"—a big step in the direction of social insurance—has been adopted by nearly all of our own states. Each one of these changes, which we now accept with hardly a second thought, represented a radical departure from the accepted practice of the day. Many of them affected, directly or indirectly, the medical profession, but in no instance did the medical profession provide the motive power that brought about the legislation. On the other hand, the interests of the medical profession have in most instances been left entirely out of consideration and the profession has been compelled to adjust its policies as well as possible, to meet the changed conditions which it had little or no voice in determining.

It is decidedly pertinent to ask the question,—how has this change of attitude toward the medical profession come about? Why has this profession been disregarded—the profession which above all others has been considered the most learned and which for centuries was studied by the leading statesmen and philosophers of the European world in order that they might obtain that broad vision and humanitarian viewpoint on which it was founded? Voltaire wrote, almost two centuries ago: "Men who are occupied in the restoration of health to other men, by joint exertion of skill and humanity, are above all the great of the earth. They even partake of the divinity, since to preserve and renew is almost as noble as to create." Why is it that a profession composed of such men is now rarely consulted, even on issues which directly concern its own welfare? Surely it is not because our physicians are ministering less efficiently to the ills of mankind! Surely they are not rendering less skillful service to their patients! On the contrary, medical science has made invaluable discoveries concerning the causes and processes of disease, and undreamed-of advances in treatment and prognosis. Our medical schools have been improved and the standards have been raised so that the graduate of today is more highly trained than ever before. After having spent at least seven years in scientific study, he goes out into the community, a more thoroughly trained scientist than the medical school has ever supplied to the country before. Surely, we answer, the fault cannot be there. And yet, if we analyze it carefully, is it not possible that the seed of the trouble lies in that very intensive and prolonged scientific training which he undergoes? Does he not devote himself so undividedly to scientific study, and does he not confine his interests so exclusively to the sequestered laboratory and clinic room, that he completely loses touch with the pulse of the world? Does he not become so highly specialized that his interests, and hence his sphere of usefulness, be-

*From Department of Preventive Medicine and Public Health Medical School, and Students' Health Service, University of Minnesota.

come narrow and very limited? And does not all of this tend to make the physician of today unsocial, undemocratic, self-sufficient and self-centered?

In the field of Public Health the absence of interest and leadership on the part of most of the medical profession is becoming apparent, and more and more the instigation, control and direction of health movements is passing into the hands of the laity. This is a perfectly natural sequence of events, because, as the public realizes the possibility of procuring for itself a greater degree of protection against disease, it demands leadership. Failing to find this among those best fitted to assume it, enthusiasts from among its own members naturally spring up as leaders. The medical profession holds itself aloof and remains passive when some health measures are being proposed; against others it voices bitter opposition. One of its reasons frequently given for this, and the one which the public usually interprets as being the *greatest* of its reasons, is that the proposed measure is considered to be inimical "to the best interests of the profession." The public, not realizing that the best interests of the profession usually represent also the best interests of the public, has now come to view with suspicion any opposition which is voiced by the profession. Take for example the bills for the licensing of chiropractors or other untrained cults: the medical profession, realizing the danger to the public of such legislation, opposes it and yet their opposition is considered by many as merely an attempt to protect their own selfish interests. There is today a broad gulf of misunderstanding between the public and the medical profession and it seems that the means for bridging this gulf must come from the side of the profession. General health education and unselfish interest in public welfare are the timbers of which the bridge must be built.

There is no other profession which has contributed so much in the way of scientific discoveries and which has so unselfishly given of its information and services to the public in order that suffering might be prevented and death rendered more remote. The Public Health Movement owes its inception and growth almost entirely to medical men. The science of bacteriology, which was established by medical scientists, has become the basis for previously impossible progress in the prevention and control of disease. Cholera, yellow fever and bubonic plague are now almost unknown; while typhoid fever, dysentery, small-pox, malaria and others take a much smaller toll of human lives than was their lot a few years ago. In all of this, which has made possible the saving of several millions of human lives, it was the medical men who gave to the world the information as to how the disease could be prevented and it was the same group of men who instigated the legislative action which provided for the public the greatest possible protection.

Why, then, in the present day, is public health work passing more and more into the hands of the untrained laity? Why do we find many physicians not only unco-operative but actually antagonistic to health movements, official as well as voluntary? Why, to epitomize all such questions, is the medical profession losing its position in the vanguard of public health and welfare movements? Does not the answer lie in the fact that, in our absorption in scientific problems, we have lost sight of the fact that we are an integral part of that social complex called the community, and have failed to realize that "the time is at hand when the public are no longer to be thought of as beneficiaries in the public health movement, but are to be trusted as participants"?[1] Having failed to promptly recognize these facts and to keep up an active participation in the readjustment and reconstruction that is going on in the world, has not our profession been preceded by the economic and industrial interests in the recognition of the necessity for constructive health legislation? Dr. Otto P. Geier expresses it forcibly when he says: "It is for the medical profession at large to determine what place it will hold: whether in the swift current of thought, or in the quiet eddies; whether to stay on the edge of life, or close up to the great melting-pot of human experience; whether to remain in billet or press on to the firing line where men are fighting for life's goal."[2]

So much for the past and present! What of the future? The fact that government reports show that one-quarter of our yearly mortality and more than a half of our yearly morbidity are due to preventable diseases is sufficient evidence that, however much has been accomplished, much more remains to be done. The physical examinations which we performed on entering students at the University of Minnesota last fall revealed the fact that more than 50 per cent of the boys and girls, who were selected to receive higher education at the expense of the state, had one or more physical

defects which would handicap them more or less seriously, not only in college, but also in later life. And practically all of these defects could have been easily prevented or corrected had the boys and girls received the proper care and instruction in early life. Infant mortality has been very greatly reduced and yet almost 10 per cent of the babies which come into this life die before they learn to walk and talk. A committee on Industrial Waste, appointed by Herbert Hoover, reported in September of last year that "the 42,000,000 men and women gainfully employed (in this country) probably lose on an average more than eight days each year from illness disabilities."[3] Calculations based on these figures indicate that more than a billion dollars a year are lost in our country by idleness occasioned by illness. These are but a few examples of the possibilities with which health work is confronted.

Now, with such possibilities before us what is the program which will most efficiently make for their realization? Clearly we cannot longer rely on sanitation and legislation. We must turn to the individual, concentrating on persons rather than on things. We must provide for three things: for adequate and efficient health organizations, for sufficient medical service and for the education of the public. To accomplish these purposes leaders are needed and the co-operation of all who are qualified to contribute, most notably of the medical profession.

The provision of more adequate and efficient health organizations will come as the public realizes their value. Even now health work is no longer the haven of the unsuccessful practitioner of medicine, for it offers possibilities for service and accomplishment which are attracting the ablest of our younger men and women. This work needs specialists, men who have the community and not the individualistic point of view, men who are well paid and who are in no sense in competition with the practicing physicians. The establishment of schools and curricula of public health is making it possible for the country to procure such men, and, being available, they should be demanded. They will become the allies, the co-workers, the consultants, and the aides of the physicians in practice. Such men should be demanded not only by cities, but rural communities also should and will have their full-time sanitarians and their centers of health.

In an efficient health organization a competent sanitarian, or officer of health, with his laboratories, clerks and public health nurses is most essential, but he cannot succeed alone. He needs must have the co-operation and support of every practitioner of medicine in the community. It is the physician who should be the prime mover in the procuring of efficient health organizations and administration; he should support actively and whole-heartedly, never opposing by word, deed, or disinterested aloofness, movements for better health; he should be the leader and the director of public opinion in all health work. If, as is not infrequently the case, the physician discovers that unsatisfactory or incompetent service is being rendered in some phase of health work, he should use his influence and devote his energy toward improving the service and not arbitrarily oppose a practice that is inherently right.

The second problem, that of providing adequate medical service, is one which is constantly claiming the attention, not only of the medical profession, but also of the public. We have 110,000 doctors in the United States to care for our 115,000,000 population—about one doctor for every 1,000 people. Does it necessarily follow that every citizen is receiving adequate medical service? A study of any community will convince that it does not. The great majority of our adult men and women have never had even one complete physical examination. Practically all large colleges and universities have recognized this fact and have established some sort of health service for their students. The experience of any of these services will supply further evidence on this point. At the University of Minnesota, with a student body of approximately 10,000, we have during the school year an average of between 150 and 200 calls at the students' clinic per day for medical advice or treatment. If this same ratio held for the whole country, doctors would have an average of more than twenty patients per day, exclusive of bed cases. It is apparent that even our supposedly intelligent people are not receiving adequate medical service. Whether or not they themselves are to blame, the fact remains, and some solution will be demanded. Let us hope that the medical profession will take an active interest in this problem and provide the solution. This leadership is essential, not only that the future of the profession may be safeguarded, but also that the public may be protected from those radical measures which perniciously active reformers may at any time pro-

pose. Dr. J. C. Litzenberg ably epitomizes this question when he says: "It will not do to simply organize opposition, for that will be interpreted as a selfish attempt to protect our own interests, but the question must be tackled in a broad-minded way. We must look upon our profession, not as a business alone, but as a calling as well, which in itself implies public service. We must realize that the public is so vitally interested in the practice of medicine, that in many ways it is more or less of a public utility, which means that our decisions must at all times take the public into consideration and into our confidence, otherwise we may have to submit, as public utility corporations do, to public control which will give better results by mutual understanding and concessions than by compulsion."[4]

The third phase of the health program of the future, the education of the public in the means by which health may be conserved and disease prevented, is a most difficult but at the same time a most necessary public health measure. Today the diseases which are causing most of our morbidity are transferred by the contact, direct or indirect, of a well person with one who is infected, and in these diseases we can hope to obtain definite reduction only by instructing the individual as to the means by which he can protect himself and his community from infection. Education is the keynote to better health and the death knell of the quack and the charlatan. The University has taken the lead in health education by the establishment of a department of Preventive Medicine and Public Health. The rest of the state should follow this example, doing so with the co-operation and under the direction of public spirited physicians. Dr. W. S. Rankin recently suggested a most satisfactory and concrete program by means of which the local medical societies may take the lead in this most important work[5]. The process of general health education will of necessity be slow, but, when accomplished, the public not only will comply with the exhortation, "know thyself," but also will realize that health is truly a purchasable commodity—a treasure which anyone can have if he is willing to pay the price. With this understanding the popular idea that health is something to be doled out by charity organizations will at once be thrown into the discard.

To summarize, the public health program of today may be divided into three parts: the establishment of adequate health organizations, the provision of sufficient medical service and the health education of the general public. In each of these the practicing physician should play a most important rôle. Mere passive interest on his part is not sufficient. It will never prevent enthusiasts and reformers from providing the solution to problems which are of most vital importance to the medical profession. Active interest in health work is essential. Participation is the duty of each and every physician.

BIBLIOGRAPHY

1. Rankin, W. S.: American Public Health Association, present, past and future. Am. Jour. Pub. Health, X, 297, Apr., 1920.
2. Geier, O. P.: Physician and surgeon in industrial era. Surg., Gynec. and Obst., XXX, 44, Jan., 1920.
3. Gadsky, Margaret: Engineer's report on industrial waste. Monthly Labor Review, VIII, 12, Sept., 1921.
4. Litzenberg, J. C.: Socialism and the practice of medicine. Minn. Med., III, 511, Nov., 1920.
5. Rankin, W. S.: The mutual interest of the profession and the public. Jour. Am. Med. Assn., LXXIX, 281, July 22, 1922.

MINNESOTA MEDICINE

Owned by
The Minnesota State Medical Association.
PUBLISHED BY ITS EDITING and PUBLISHING COMMITTEE
R. E. Farr, M.D. Minneapolis
H. Longstreet Taylor, M.D. St. Paul
L. B. Wilson, M.D. Rochester
F. L. Adair, M.D. Minneapolis
J. T. Christison, M.D., St. Paul

EDITORIAL OFFICE
CARL B. DRAKE, M.D., Editor
403 Central Bank Bldg., St. Paul

BUSINESS MANAGER
J. R. Bruce, 403 Central Bank Bldg., Saint Paul
Telephone: Cedar 1683
210 Commercial Bldg., Minneapolis
Telephone: Atlantic 2716

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal itself, not to individuals.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $3.00 per annum in advance. Single Copies 25c. Foreign Countries $3.50 per annum.

Vol. V November, 1922. No. 11

EDITORIAL

Medical Practice

The Minnesota State Medical meeting at Minneapolis may be likened to a squall that ruffled the rather turbulent waters of the present medical situation. It is generally admitted that the practice of the healing art is going through a definite transition stage brought about in part by the development of the medical specialties and in part by the so-called cults, with the tendency toward state medicine ever lowering in the background.

Specialism has led to the formation of clinical groups, and group practice has its champions and detractors. There is little question, however, but that group practice has its advantages and has come to stay. Specialists are absolutely necessary and their need will become even more apparent as the science and art of medicine develops further. On the other hand, there will ever be a demand for the general practitioner to handle the large percentage of patients, estimated by some as 85 per cent, who do not require a specialist's care. The higher fees and easier professional life of the specialist strongly attract recent medical graduates, but the necessity for several years of general practice before adopting a specialty cannot be too strongly emphasized. The narrowing effect of specialism exerts only too strong an influence on the sound judgment of the physician.

It is being argued that the dearth of general practitioners has led to the phenomenal growth of cults—the chiropractic in particular. Whether this is the case or not, efforts should be directed toward encouraging recent graduates to enter the general field. Whether this will necessitate a shorter period of medical training is open to question, for it is difficult to see just where the standard medical course of today could be abbreviated to advantage.

As a matter of fact, much apparent specialism is not real specialism. Many physicians are working gradually into a specialty and this is as it should be. Only too many of the profession are demanding the specialist's fee who are not entitled to it.

At the present time much energy is being exerted in an effort to counteract the evils of the so-called cults. It would be well if some of this energy were directed towards a house-cleaning in the ranks of the organized profession itself. Most county societies include in their membership medical men who are crooks and are recognized by their associates as such and who have no place in our ranks. The house-cleaning should go still further and extend to the unprincipled physician who is outside the county society and whose license should be revoked. Every board of medical examiners knows the difficulties to be encountered in depriving a licentiate of his right to practice and often the blame cannot be placed at the door of the medical profession. Every physician is human and makes errors and is therefore loath to point the accusing finger at his fellow practitioner. Nevertheless, a continuous warfare must be constantly maintained against the man who disgraces himself, his medical associates and the honorable profession of medicine.

The So-called Undernourished Child

The physically sub-standard child, whether called undernourished, malnourished or by some other term, appears to be difficult to define.

The popular conception among lay workers that this condition is a nutrition problem has led to their stressing the importance of food, and mothers' clubs' milk committees, etc., have sprung up everywhere, which have for their object the supplementing of home diet.

This has naturally caused medical writers, who are also thinking in terms of nutrition, to point out

that while scientific investigators have made great advances in their knowledge of food values, comparatively little is yet known, and consequently much of the enthusiastic work advocated by these milk committees may do harm.

Both of these groups, lay and professional, evidently think of this class of children as literally undernourished.

Again because of a lack of a proper definition, necessarily arbitrary standards have been set up as to what constitutes a physically sub-standard child, and the percentages of this class vary accordingly, with the result that some sincere workers criticize rather harshly others who may not use the same standards.

The standards most generally in use in this country are two, one devised by Dr. W. R. P. Emerson of Boston and the other by Thos. D. Wood of Teachers' College, New York. Both of these standards are based on weight in relation to standing height according to sex, and also consider height and weight in relation to age. There are several foreign standards, two of which have been introduced by Pirquet and Dreyer and another called the Dunfermline scale, introduced by Dr. Alister Mackenzie. In addition to the standards mentioned the U. S. Public Health Service is now making some careful studies of the physical development of school children in co-operation with the divisions of child hygiene of several state boards of health with the idea of arriving at some standard.

That there exists a considerable number of these sub-standard children cannot be questioned no matter by what name the condition is called or by what standard they are judged. It may reasonably be accepted for example that most of those rejected by the army medical examining board were at one time children of this class, and as in their case may it not be, as a recent writer says of malnutrition, "a symptom due to manifold causes operating singly or in combination."

Sir George Newman is quoted as saying:

"In endeavoring to estimate a child's nutrition or its opposite (viz., malnutrition), we must think not only of bulk and weight of body, but of ratio of status to weight; of the general balance and 'substance' of the body and of its carriage and bearing; of the firmness of the tissues; of the presence of subcutaneous fat; of the condition and process of the development of the muscular system as expressed in listlessness or alertness, in apathy or keenness; of the condition of the various systems of the body, and, speaking generally, of the relative balance and co-ordination of the functions of digestion, absorption and assimilation of food, as well as of the excretion of waste products. It is obvious that these are data which are likely to lead to a much more reliable opinion than the consideration of any one factor or ratio, however expeditiously obtained or convenient in form or practice, and these data will demand a wider as well as a more careful and accurate observation of the whole physique of the child. Nor can an ultimate opinion always be formed at one inspection at any given moment. For nutrition, like its reverse, malnutrition, is a process and not an event."

If we are to accept this conception (Newman's) of the so-called undernourished child it will be seen that not one factor, but many, play a part. Physical defects, economic conditions, health habits and environment must be considered. It is a medical problem in its broadest sense. As one pediatrician says, "The physician who sits in his office and tries to treat malnutrition by physical examination of the child alone without entering into the life and habits and environment of the child, will not get very far, nor will the nutritional worker who tries to treat malnutrition by diet without understanding the physical background."

When the lay workers realize the necessity for medical supervision of these children and, on the other hand, the doctors are aroused from their general apathy in regard to these sub-standard children, there will be no danger of this so-called nutritional work becoming a fad.

The doctors must take notice of underweight as a danger signal. If they don't, the lay workers are going to continue this work unsupervised.

Its importance is emphasized by Dr. Haven Emerson in a recent article on "The Causes of the Rapidly Increasing Fall of the Tuberculosis Death Rate in the Last Five Years." Writing of one of the accessory factors, he says:

"It is believed that the rapidly growing interest in the neglected period of childhood, the preschool, the runabout or the two to five years' age, has begun to show results in the more uniform growth and better nutrition of the children of the poor, the neglected and the ignorant, among whom in the past tuberculosis of bones, joints, lymph nodes and lungs has been common.

"No definite evidence can be offered to show that the detection, supervision and correction of undernourishment among children has been a major factor in the reduction of tuberculosis in New York, but whether among the preschool children or their older brothers and sisters, the pride in and attention to normal growth and development, and the striking change in weight and appearance of the thousands of children who have been reached by the nutritional propaganda and the supplementary school lunch system during the past ten years, must have been noted by

all interested observers. Certainly, the higher level of nutritional equilibrium, attained among children up to fifteen years of age, must have played a significant part in the diminution of deaths from tuberculosis in this age group."

Dr. Henry D. Chadwick of Westfield State Sanatorium, Westfield, Mass., after an examination of 2,828 children in which he found a large percentage of malnutrition, states:

"The evidence I have submitted only goes to confirm the belief held by many observers that antituberculosis activities should be directed more and more toward child welfare. To cover such a vast field and get thousands of tuberculous and potentially tuberculous children under supervision we should strongly advocate the adoption in every city and town of a method of group instruction and individual treatment along the lines developed by Professor Emerson in his nutrition clinics for delicate children. This can best be done in connection with the schools, as the children are there brought under official control for ten months of each year. We are neglecting our opportunities if we fail to do extensive preventive work with these children when they are in the earliest stage of disease and at a period in their lives when they will respond most quickly to rational changes in diet and habits of living. We must improve the physique and build up strong, disease-resisting bodies during childhood. Then the cases of tuberculosis, that smoulder away during adolescence only to break forth later on and decimate the ranks of young manhood and womanhood, will become fewer and fewer, and as a cause of death in the next generation this disease will become a much less important factor."

The removal of physical defects often causes the desired improvement in the child's condition. The removal of defects alone, however, is not always of such decided benefit, when other factors are neglected.

Over-fatigue and lack of rest are found to be frequent causes of these children being below par; a change in this respect, even to the extent of keeping them out of school part of the day in certain cases, is followed by marked improvement with less irritability, improved appetite and a decided change in the physical appearance. Some children are permitted to over-exercise in the hope of building up their physique, when they actually need to be kept quiet. Many have no regular hour of retiring and not infrequently stay up as late as their elders.

Among the difficulties to be overcome is to get the co-operation of parents. The parents are disinclined to believe that any special care of a child is necessary unless there is apparent disease, and, speaking generally, they are confirmed in their view by the opinion of the physician and his indifference to anything but actual disease. Doubtless, a number of these children do pick up without special supervision; on the other hand, there are not a few others who require it.

The necessity for medical supervision of any work which attempts to aid these children is apparent. It is a health educational plan primarily. This is shown by the effect produced in some families where others than those treated benefit by example.

The best work could be done through the schools, emphasis, however, being laid on the medical aspect of all such efforts.

—W. D. B.

"Doctor" Coué

So much has been written of late about the remarkable results accomplished by Emile Coué of Nancy, France, through his "discovery" of the therapeutic value of induced auto-suggestion that an apology is almost in order for using him as editorial material. However, the reputation Coué has achieved in France, the enthusiasm with which he has been received by the ordinarily conservative English and the way his fame is spreading over this country, demand some recognition.

On commencing one of the several accounts* of Coué's ideas and practice, one is given the impression that he is being introduced to an exceptionally optimistic physician—one who has adopted little tricks such as the knotted string and the laying on of hands for the purpose of impressing the patient with optimistic ideas. We are told of the poor woman with the breast tumor who has been told by her doctor that she has cancer but is being treated by the phrase, "Day by day, in every way, I am getting better and better" because, in Dr. Coué's opinion, the case is not one of cancer. We infer that this is probably this particular physician's way of handling a case of benign cystic mastitis. And then, bang!—we learn from other sources that Coué was once an apothecary and later practiced hypnotism, but that he knows nothing of scientific medicine. He is telling this woman she is getting "better and better" and he knows nothing about the pathology of tumors.

We read further on that it doesn't matter whether the disease is organic or functional, his method applies in all diseases the flesh is heir to, and, as a

*The Practice of Auto-suggestion by the Method of Emile Coué. C. Harry Brooks. Dodd, Mead & Co., 1922.

matter of fact, that organic disease responds even more readily to auto-suggestion than do merely functional troubles.

The opportunity for doing an immeasurable amount of harm becomes at once apparent and Coué must be relegated to the ranks with Mrs. Mary Baker Eddy and other charlatans.

Whenever a so-called discovery of this sort makes its appearance, we are forced to wonder how it can be that, in this old world of ours, no one made this discovery before. If all one has to do is to think a thing in order to accomplish it and if his imagination is so much more valuable than his will-power in attaining an object, how did it happen that no one discovered this scientific truth one or two thousand years ago? And here we have all been taught that practice makes perfect and Coué says all we really need to do after all, is to think a thing in order to do it. Possibly, we are so accustomed to unexpected discoveries in the physical realm—for instance, the remarkable development of radio—that we are looking for the same in the psychic realm.

We all know physicians who have utilized optimism consciously or unconsciously either by their words or personality for the benefit of their patients. We have, on the other hand, heard of the optimistic doctor who patted his patient, with the chronic cough, on the back, telling him he was getting better and better and incidentally, either through laziness or ignorance, failed to diagnose the case as tuberculosis and spare the family from infection.

What the world is most in need of is not men of the Coué type but trained medical men of efficiency, optimism and, most of all, common sense.

The American Society for the Control of Cancer National Cancer Week—November 12-18

The American Society for the Control of Cancer was founded in New York in May, 1913, at a meeting of the delegates appointed by the principal medical societies of the United States, together with a number of prominent lay citizens who were convinced of the need of a national organization to disseminate knowledge concerning the symptoms, diagnosis, treatment and prevention of cancer, to investigate the conditions under which cancer is found, and to compile statistics in regard thereto. The founders gave expression to the belief that a nation-wide campaign of public education regarding cancer would save thousands of lives now needlessly sacrificed because of ignorance of the warning signs of the disease, and delay in seeking early competent medical advice and treatment.

The need of such a society is immediately apparent in the increase of the death rate from cancer in the United States—from 63 per 100,000 in 1900 to 83.3 per 100,000 in 1921. In the state of Minnesota the statistics of the State Board of Health show an increase in the death rate from cancer from 66.99 per 100,000 in 1910 to 90.69 per 100,000 in 1921. Unquestionably the death rate from cancer is increasing, and during the past two years has surpassed that from tuberculosis.

During the first week in November, 1921, the American Society conducted its first annual educational campaign, and has designated the week of November 12th to 18th of this year as National Cancer Week, during which time an intensive educational campaign will be conducted.

The undersigned members of the State Cancer Committee appointed by the National Society request the co-operation of the members of the medical profession in this educational campaign indorsed by the Minnesota State Medical Society, State Board of Health, State Public Health Association, and State University.

STATE CANCER COMMITTEE

V. C. Hunt (Chairman)
A. J. Chesley (State Board of Health)
A. C. Strachauer (University of Minnesota)
T. L. Chapman
A. F. Schmitt
H. P. Ritchie
H. W. Cook

COMMUNICATIONS

To the Editor:

The following appeared in the editorial columns of the Fairmont Daily Sentinel, Friday, October 6, 1922. It is well for the profession of the state to know that there are editors who stand with us in denunciation of fraudulent medical advertising—editors that money cannot buy.

Frank Day was one of the first editors in the state to purge his columns of such advertising some ten years ago. To the writer's knowledge he has refused advertising contracts amounting to thousands of dollars in the past years.

"But our chief grievance against Senator Capper is not as a statesman and a legislator, but as a newspaper publisher and proprietor.

"'Capper's Weekly,' Senator Capper's own personal organ, claims a circulation of 700,000. Senator Capper writes extensively for every issue and it is touted as 'A Champion of Human Welfare and the Square Deal.' A recent issue before us contains a lengthy article, over a facsimile of the senator's signature, in which he expresses deep concern for boys and girls, and in chaste and beautiful English gives advice which he hopes will save them from the allurements of a giddy life and impress them with the importance of studious self-denial and rectitude of conduct.

"But in the same paper containing saintly precepts and homilies on right living, what do we find?

"Column after column of the vilest, lowest, beastliest, most misleading, deceptive, dishonest and debauching advertisements of nostrums and alleged cures of diseases that are contained in any paper in the United States that is permitted to circulate through the mails.

"There isn't a publisher in Minnesota so unscrupulous and grasping as to consider for a second any one of more than fifty advertisements that disgrace Senator Capper's paper and that have defiled its columns for more than a year.

"The medicines and cure-alls that are advertised are grossly and cruelly false and delusive and have been blacklisted and discredited by every reputable physician in the country.

"They appeal only to the poor and ignorant, suffering from maladies which skill and science and accredited diagnosticians are competent to deal with.

"Senator Capper is selling his name and fame to the dirty scoundrels who advertise these discredited concoctions which not only do no one a particle of good but inflict upon the victims habits and appetites that inevitably lead to ruin and disgrace.

"We declare in all earnestness that the class of advertising which the Capper paper contains should not only exclude it from the United States mails but should ostracize it and its publisher from every respectable household. Anyone who questions this statement is requested to procure a copy of the Capper paper and submit the advertisements it contains to a reputable physician.

"According to the published rates of Capper's Weekly these advertisements bring Senator Capper a handsome fortune every month. What it brings the deluded victims would hardly dovetail with the paper's motto: 'A Champion of Human Welfare.'

"This paper has no objection to Senator Capper's coming to our state to preach pure politics, but a man who is most shamefully and brazenly humbugging his innocent and confiding patrons is not entitled to the respect and consideration of honest voters."

R. C. HUNT,
Fairmont, Minn.

OBITUARY

JOHN D. ANDERSON

Dr. John D. Anderson, one of the most widely known general medical practitioners in Minneapolis, died September 30, 1922, at Eitel Hospital, a few hours after suffering a cerebral hemorrhage. Dr. Anderson was 67 years old.

Dr. Anderson was born June 29, 1855, in Victoria county, Ontario, and was a graduate of Toronto University. In 1879 he went to Edinburgh, Scotland, where he took a postgraduate course, winning a gold medal for his work. He received other honors from London University and the Royal College of Physicians.

Dr. Anderson came to Minneapolis in 1882 and opened his offices for practice in the Syndicate block, of which he was the first tenant.

Dr. Anderson was a member of the British Medical Association, the Hennepin County Medical Society, the Minnesota State Medical Association, the Elks and the Minneapolis Athletic Club. He is survived by his wife and two daughters, Mary and Jean Anderson.

ORAN S. PINE

Dr. Oran Steadman Pine, Civil war veteran and for many years surgeon at the Minnesota Soldiers' home and later assistant city physician of St. Paul, died as a result of heart disease at the St. Paul City Hospital, October 2, 1922, at the age of 77 years.

Dr. Pine was born at Underhill, Vermont, in 1845. He served in the Civil war with the Fifth regiment, New York volunteers. At the battle of Cold Harbor he was taken prisoner and confined in Libby prison. Later, when he was being taken to Andersonville prison, he escaped.

Following the war, Dr. Pine studied medicine at Bellevue College in New York and was graduated in 1870. He came to St. Paul in 1888 and married Dr. Alcinda Auten. He was a member of the American Medical Association.

Dr. Pine is survived by his wife, two daughters, Mrs. Fidelia Auten Taylor of Table Grove, Ill., Miss Esther Pine of St. Paul; a niece, Mrs. Herbert Bolstad of St. Paul; a brother, Elmer Pine of Montpelier, Vt.; and a sister, Mrs. Eleanor Osgood of Grand Isle, Vt.

HENRY C. ALDRICH

Dr. Henry C. Aldrich, aged 65, a physician in Minneapolis for more than 30 years, died September 29 in Santa Monica, California, where he had resided for the past year.

Dr. Aldrich was born in Minneapolis in 1857, the son of Mr. and Mrs. Cyrus Aldrich. He graduated from the University of Pennsylvania in 1879 and from Hahnemann Medical College in Philadelphia in 1881. He was clinical professor in women's diseases at the University of Minnesota for several years and later was registrar of the American Institute of Homeopathy. He was formerly president of the American Association of Orificial Surgeons, Minnesota State Institute of Homeopathy and Minneapolis Homeopathic Society and was surgeon of the Minneapolis City Hospital from 1897 to 1905.

Dr. Aldrich is survived by his wife and son, Henry, who were with him in California at the time of his death.

Dr. Frank W. Anderson, a member of the permanent staff of the Mayo Clinic, Rochester, died September 29, 1922, at his home in Roslindale, Massachusetts.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

NICOLLET-LeSUEUR COUNTY MEDICAL SOCIETY

The semi-annual meeting of the Nicollet-LeSueur County Medical Society was held at the State Hospital at St. Peter, Tuesday evening, October 3, with an attendance of nineteen members. Following the business meeting, Dr. George T. Baskett contributed a paper on "State Institutions." Preceding the meeting, the hospital doctors entertained members of the society at a banquet.

MINNESOTA STATE MEDICAL ASSOCIATION

The fifty-fourth annual meeting of the Minnesota State Medical Association was held on the University campus, Minneapolis, October 12, 13 and 14, 1922. The registration was 409 of a total membership of 1,815. The addresses were furnished by the association members and the program was a full one.

Professor A. J. Carlson of the University of Chicago addressed the members at the annual banquet held at the Curtis Hotel, Minneapolis, and spoke on "Recent Advances in the Physiology of the Alimentary Tract."

The following officers were elected for the year 1923: President, E. Starr Judd, Rochester; first vice president, Theodore Bratrud, Warren; second vice president, H. P. Ritchie, St. Paul; third vice president, J. C. Metzger, Olivia; secretary, Carl B. Drake, St. Paul; treasurer, F. L. Beckley, St. Paul. J. G. Millspaugh, Little Falls, W. A. Dennis, St. Paul, and H. M. Workman, Tracy, were re-elected to act as councilors from the second, third and fifth districts respectively. Dr. J. L. Rothrock of St. Paul was elected delegate to the annual meeting of the American Medical Association, with Dr. J. F. Corbett of Minneapolis as alternate.

It was decided to hold the next annual meeting of the association in St. Paul in October, 1923.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE RAILWAY SURGICAL ASSOCIATION

The fifteenth annual meeting of the Minneapolis, St. Paul & Sault Ste. Marie Railway Surgical Association was held September 25 and 26, 1922, at the Leland Hotel, Minot, North Dakota.

Morning and afternoon sessions, Monday, September 25, were devoted to the reading and discussion of papers. At a banquet held in the Leland Hotel, Monday evening, Dr. Arthur N. Collins of Duluth delivered the president's address followed by addresses given by Austin E. Wallace, Minneapolis, general manager of the Soo Railway, and Hon. R. A. Nestos, Governor of North Dakota.

The business session held Tuesday morning resulted in the election of the following officers for the ensuing year: President, Dr. John V. R. Lyman, Eau Claire, Wisconsin; vice president, Dr. Alfred M. Ridgway, Annandale, Minnesota; secretary-treasurer, Dr. John H. Rishmiller, Minneapolis.

The 1923 annual meeting will be held in Minneapolis, the time of the meeting to be left to the discretion of the officers.

ST. PAUL CLINIC WEEK

St. Paul Clinic Week will be held this year from January 9 to 12, 1923, inclusive. Morning sessions will be devoted to clinical work with a symposium each afternoon. The daily sessions will be addressed by visiting physicians.

RED RIVER VALLEY MEDICAL SOCIETY

The Red River Valley Medical Society held its regular annual meeting at the Oakland Park Sanatorium, Thief River Falls, Thursday, September 14, 1922.

The following program was given: Clinics on Pulmonary and Laryngeal Tuberculosis, Dr. M. Geo. Milan, Thief River Falls; "Classification of the Pulmonary Tuberculous Individual," Dr. M. Geo. Milan, Thief River Falls, Minn.; "The Uses and Limitations of the *X*-Ray in the Diagnosis of Pulmonary Tuberculosis," Dr. O. N. Meland, Warren, Minn.; "The Value of Rest in the Treatment of Pulmonary Tuberculosis," Dr. F. F. Callahan, Pokegama, Minn.; "Surgical Tuberculosis," Dr. Emil S. Geist, Minneapolis, Minn.; "The State Campaign Against Tuberculosis: Its Accomplishments and Its Future," Dr. Robinson Bosworth, St. Paul, Minn.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES—WRIGHT COUNTY MEDICAL SOCIETY

The annual meeting of the Wright County Medical Society was held Tuesday, October 3, at Buffalo. The program included the following papers:

Irregularities of the Heart—Dr. T. A. Peppard, Minneapolis.

Chronic Valvular Disease of the Heart—Dr. L. Harrison, Howard Lake.

Pericarditis—Dr. C. L. Roholt, Waverly.

Myocarditis—Dr. A. M. Ridgway, Annandale.

The following officers were elected for the ensuing year: President, Dr. E. E. Shrader, Watertown; vice president, Dr. A. G. Moffatt, Howard Lake; secretary-treasurer, Dr. J. J. Catlin, Buffalo; delegate, Dr. L. Harriman, Howard Lake; alternate, Dr. V. Roseau, Maple Lake; censor, Dr. J. J. Catlin, Buffalo.

Following the meeting, members of the society and their wives were entertained at a banquet and social evening.

MINNESOTA PATHOLOGICAL SOCIETY

At a meeting of the Minnesota Pathological Society, held Tuesday evening, October 17, at the Institute of Anatomy, University campus, Minneapolis, the following papers were presented: Ovarian Tumors and Their Clinical Significance, Dr. W. C. MacCarty, Rochester; Periarteritis Nodosa, Dr. W. A. O'Brien, Minneapolis; Teratoma of Ovary, Dr. Margaret Warwick, St. Paul; Accessory Breast, Dr. J. Warren Bell, Minneapolis.

OF GENERAL INTEREST

Dr. Ross Gamble is now engaged in practice at Ellendale, Minnesota.

Dr. Howard L. Sargeant, formerly of Dalton, is now located at Rochester.

Dr. H. C. Anderson of St. Paul is now engaged in practice at Little Fork, Minnesota.

Dr. Robert Emmett Farr read a paper before the Surgical Society of Portland, Me., October 27.

Dr. G. C. Hoff, formerly practicing at Tower City, North Dakota, has located at Elgin, Minnesota.

Dr. H. J. Kooiker, formerly of Doon, Iowa, is now engaged in the practice of medicine at Hills, Minnesota.

Dr. Fredolph H. Magney of Duluth and Miss Ruth Taylor, also of Duluth, were married August 15, 1922.

Miss Ida Ann French of Minneapolis and Dr. Oswald Wyatt were married in Minneapolis, September 16.

The new 89-room addition to St. Mary's Hospital, Duluth, was completed and opened to patients in September.

Dr. M. H. Tibbetts of Duluth has recently returned from a two weeks' canoe trip in the National Superior Forest.

Dr. C. W. Lynde, who has been engaged in practice at New London for the past year, has moved his practice to Chokio.

Dr. A. A. Rankin has removed from Zumbro Falls to Waconia, Minnesota, where he practiced formerly from 1904 to 1911.

Dr. M. L. Golberg has recently changed his residence from Jasper, Minnesota, to 1535 East Thirty-second Street, Minneapolis.

Dr. William J. Eklund has been elected president of the Duluth National Bank to succeed his father, the late Dr. J. J. Eklund.

Dr. R. W. Nichols, who received his graduate degrees from the Mayo Foundation October 2, will practice in New Haven, Conn.

Dr. L. W. Satterlee, formerly of Parkers Prairie, has located in Pequot, where he has taken over the practice of the late Dr. Knights.

Dr. A. J. Goodwin received graduate degrees from the Mayo Foundation, October 2. Dr. Goodwin will practice in Wheeling, West Virginia.

Dr. and Mrs. Donald Rockwell announce the arrival of a daughter, Mary Ethel, born September 27 at St. Mary's Hospital, Rochester, Minn.

Dr. George M. McCreight of Des Moines, Iowa, formerly of Albert Lea, has announced his marriage to Miss Maurine McTherrin of Des Moines.

Dr. C. W. More of Eveleth has returned from a trip east, where he attended the meeting of the National Hospital Association at Atlantic City.

Dr. A. L. Lockwood, formerly of the Mayo Clinic, has announced the opening of the Lockwood Clinic at 164 East Bloor Street, Toronto, Ontario.

Dr. F. S. Chambers, first assistant in orthopedic surgery at the Mayo Clinic, left October 3 for Trenton, New Jersey, where he will practice orthopedic surgery.

An effort is being made by the St. Louis County Medical Society to educate the public through the public schools of Duluth in the matter of goiter prevention.

Dr. M. G. Peterman, formerly chief resident physician of the City and County Hospital, has accepted a position at the Mayo Clinic, in the department of surgery.

Dr. V. P. Blair of St. Louis visited the Mayo Clinic at Rochester, September 27 and 28. Dr. Blair is Professor of Oral and Plastic Surgery in the Washington University.

Dr. W. J. Kucera has announced the removal of his offices to 329 Hennepin Avenue, Minneapolis, where he is specializing in diseases of the eye, ear, nose and throat.

Dr. H. O. Ruud of Alexandria has sold his practice to Dr. E. Tanquist of Minneapolis, and will take a special course in eye, ear, nose and throat at the state university.

Word has been received of the marriage of Dr. John A. Saari, formerly of Eveleth, Minn., now of Portland, Oregon, to Miss Frances Cook of Terre Haute, Indiana, September 7.

Dr. G. R. Moloney, Belle Plaine, recently returned from a two and one-half months' visit to Ireland. He says that things have changed for the better since his emigration fifty years ago.

Dr. H. H. Bowing, of the Mayo Clinic, Rochester, attended the meeting of the Milwaukee Surgical Society, October 2, and read a paper on radium and roentgen rays in surgery.

Dr. S. Brock, having received his graduate degree in surgery at the Mayo Clinic, Rochester, left the Clinic, October 1. He will be associated with Drs. Storer and Kegel of Chicago.

Dr. J. O. McKeon of Montgomery, who recently underwent an operation at Abbott Hospital, Minneapolis, is now able to take care of his practice again after an absence of several weeks.

A pretty fall wedding was that of Dr. Harold Nesbit of Rochester and Miss Dorothy Tennant of Wabasha, which took place at the home of the bride's parents in Wabasha, September 15.

Dr. and Mrs. O. J. Seifert of New Ulm have sailed for Europe, where Dr. Seifert will spend six months in study. Dr. J. H. Vogel will have charge of Dr. Seifert's practice in his absence.

Dr. R. H. Sweetman, formerly of Menahga, has located in Sauk Center, where he has opened a ten-bed hospital. Dr. Sweetman will engage in general practice, with special attention to surgery.

Dr. Albert H. Aland, who was formerly located in St. Paul, has become associated with Drs. Farr and Maxeiner in the Surgical Clinic of Minneapolis in the Eye, Ear, Nose and Throat Department.

Dr. E. W. Hayes, formerly of Tucson, Arizona, and Banning, California, is now associated with Drs. Kalb, Kirschner, Putnam and Gleeten, who have formed the Monrovia Tuberculosis Clinic, California.

Dr. J. C. Wilkinson sold his practice at Red Lake Falls last month to Dr. J. A. Roy of Argyle. Dr. Wilkinson and family are now making their home at Donna, Texas, where the doctor has extensive land interests.

Dr. J. H. Kauffman, who has been practicing at Elgin for the past three months, has returned to his former location at Currie, where he has bought an interest in a drug store in addition to taking over his former practice.

Dr. Edwin O. Swanson of St. Paul and Miss May Ludke of Amery, Wisconsin, were married in St. Paul September 14. Dr. and Mrs. Swanson are now at home in St. Paul, following a trip through northern Minnesota.

Dr. and Mrs. Soren P. Rees of Minneapolis have returned from a motor trip through the New England states. They were accompanied by their son, Douglas Rees, who is a senior at Wesleyan University, Middletown, Conn.

Dr. O. E. Hagen of Butterfield has associated with him in his practice, Dr. Rempel, who recently came from Russia. Dr. Rempel is a graduate of a Russian medical college, having a seven years' course with a year of clinical work.

Announcement has been received of the marriage of Dr. William Andrew Lee of Fergus Falls and Miss Lucille L. Moses of Mankato, which occurred September 7. Dr. and Mrs. Lee are now at home at 336 North Whitford Street, Fergus Falls.

Dr. H. E. Robertson of the Mayo Clinic, Rochester, represented the seventh corps area of reserve officers in Washington, D. C., early in October. The meeting was called for the purpose of organizing a national association of reserve officers.

Dr. D. W. McDougald has disposed of his practice and equipment at Le Sueur and left, September 16, for New York, where he intends to take postgraduate work in eye, ear, nose and throat, after which he will return to the Northwest to practice his specialty. Dr. S. Ericson, formerly of Elmore, is now located at Le Sueur.

Drs. C. A. Hedblom and W. S. Lemon of the Mayo Clinic, Rochester, attended the meeting of the Trudeau Society at Grand Rapids, Mich., and another medical society meeting at Battle Creek, Mich. Dr. Hedblom read a paper on recent progress in thoracic surgery, and Dr. Lemon read one on the incidence of tuberculosis and Hodgkin's disease before both meetings.

The American Medical Association of Vienna wishes the announcement made of the restoration of friendly understandings between their organization and the teaching body of the University of Vienna. Announcements have been made elsewhere of some friction occurring between some of the visiting American doctors and the Vienna faculty, but this occurred in connection with courses not under the control of the American Medical Association of Vienna. Courses in English are now booked in the various branches of medicine and surgery and prices range from $3.00 to $5.00 an hour for the group taking such courses.

Dr. Harvey Cushing, '91, of Harvard University, has won the Charles Mickle Fellowship from the Faculty of Medicine of Toronto University. He has accepted the fellowship, which is for $1,000, but has stipulated that the money shall be used to send one graduate of the University of Toronto to Harvard to work with him. The Charles Mickle Fellowship, bequeathed by the late Dr. W. J. Mickle, is the annual income from an endowment of $25,000 and is awarded annually to the member of the medical profession anywhere who is considered to have done the most during the preceding ten years to advance sound knowledge of a practical kind in medicine.

At a meeting held in Millard Hall, University campus, Minneapolis, October 13, the wives of members of the Minnesota State Medical Association organized a Women's Auxiliary to the association. The following officers were elected to serve for the ensuing year: President, Mrs. H. B. Sweetser, Minneapolis; first vice-president, Mrs. H. P. Ritchie, St. Paul; second vice-president, Mrs. K. E. Bergquist, Duluth; third vice-president, Mrs. F. C. Rodda, Minneapolis; recording secretary, Mrs. Rood Taylor, Minneapolis; corresponding secretary, Mrs. Carl B. Drake, St. Paul; treasurer, Mrs. E. Z. Wanous, Minneapolis. A fourth vice-president is to be elected from some district outside the cities of Minneapolis, St. Paul and Duluth. It was also decided that the president should appoint a publicity secretary and a constitution committee.

The annual luncheon and meeting of the Medical Alumni of the University of Minnesota was held Saturday, October 14, at the Men's Union building on the University campus. The following officers were elected for the ensuing year: President, Dr. E. L. Gardner, Minneapolis; first vice president, Dr. George B. Eusterman, Rochester; second vice president, Dr. T. L. Martin, Duluth. Dr. Donald Daniel was re-elected secretary-treasurer and Dr. George Douglas Head was elected as representative on the general alumni committee. Dr. J. W. George of Minneapolis gave the obituary report and called attention to the fact that six of the twelve deaths reported during the year were violent. He called attention to the desirability of extending the field of Preventive Medicine to include the prevention of accidents such as the railroad grade crossing. Two days later, Dr. George met with an automobile accident and later in the day died as he was driving his car, death being due to heart disease.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

A Manual of Pharmacology and Its Applications to Therapeutics and Toxicology. Torald Sollman, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine, Western Reserve University, Cleveland. Second edition. Octavo of 1066 pages. Philadelphia and London: W. B. Saunders Company, 1922. Cloth, $7.00 net.

Lectures on Dietetics. Max Einhorn, M.D., Emeritus Professor of Medicine at the New York Post-Graduate Medical School and Hospital, New York. 12mo of 244 pages. Philadelphia and London: W. B. Saunders Company, 1922. Cloth, $2.25 net.

LOCATIONS

There is an opening for a physician at McGrath, Minn., where the vicinity is without a doctor within 20 miles. A new building is being erected by the community for use as office and living rooms for a resident physician. Address Frank Klingl, McGrath, Minn.

Zumbro Falls, Minn., has been without a physician since October 1, 1922. Good opening.